**WATER CONSERVATION BILL 1886**

**Legislative Council, 15 June 1886, pages 164-71**

Second reading

**The COMMISSIONER of CROWN LANDS (Hon. J. H. Howe**), in moving the second reading of this bill, did not pretend to know everything like the Hon. Mr. Playford.

The SPEAKER – The Hon member is referring to a previous debate. (Laughter)

The COMMISSIONER of CROWN LANDS (Hon. J. H Howe) questioned weather the Speaker could say what he was going to refer to.

The SPEAKER—The hon. member stated—

The COMMISSIONER of CROWN LANDS (Hon. J. H Howe) had not yet stated anything. Although the hon. member for East Torrens had said that he did not know much about a certain matter which had been discussed, still he thought he knew a little about the Bill which he now had under consideration. (The Hon. T. Playford—“Precious little.”). He was quite willing to stake his knowledge on water conservation against that of the hon. member. (The Hon. T. Playford—“ And lamentably fail.”) So long as the hon. member was on the Opposition benches his ejaculations amounted to the same thing—" What do you know ?” Was all the wisdom of the colony centred in the hon. member ? He considered that he knew as much about water conservation as the hon. member did about finance. (Laughter. The Hon. J. Colton—“ Let us hear what you do know.”) The question was one of the most important that could engage the attention of hon. members. (Hear, hear.) For a number of years the colony had been obtaining very low prices for its cereals, but he did not think those low prices conduced so much to the depression that existed as the endeavor to settle people on land that was comparatively waterless, owing to the insufficient rainfall. Tourists and members of the House who had made the tour of the civilised world informed him that our soil would bear favorable comparison with that of any other country. The arable land in the colony was greater in extent, and equal in fertility to that of the Pacific Slope. (Hear, hear.) As an illustration of the superiority of our soil and the want of surface water he would draw hon members’ attention to the great blank in the western country—an area almost equal to the country settled by pastoralists or agriculturists. The reason was that it was almost waterless. Many of our pioneer settlers had endeavored to obtain water in that country, but the cost of equipping a party with the necessary machinery for boring was such that private individuals could not afford to enter into the undertaking, especially as there was no base of operations on which to go. The Government had only been a month or two in office when the question was discussed in Cabinet. Those who had explored the country said it was the largest scope of pastoral land of a certain quality available in the Australian colonies. Much of it was superior to the country already occupied by our pastoral lessees. The average rainfall was from 8 to 10 inches, and that in a climate like ours made the country suitable for pastoral occupation. The difficulty the Government had was that there was no surface water. From the Musgrave ranges, which were double the height of the Mount Lofty Range, rivers and creeks emerged but after going some distance on the plains the water disappeared. Some thought it went to the Lake Eyre country, while ethers, including the Government Geologist, were of opinion that a great deal of it passed to the western shores of the ocean. This being the case the Government decided to forward a party to the country. This had been done, machinery had been erected, and boring was commenced on the first of June. From what he could learn from the Government Geologist he thought there was every hope that water would be found, and that a basis would be formed for future operations. Mr. Krichauff—“ Where—at Eucla?”) No, not so far—at the Nullabar plains. The Government thought it was better to get a base of operations first and then offer on lease a large area of this really excellent pastoral country, charging a certain interest on the water conservation thereon. (Mr. Burgoyne— “ Hear hear.”) If as the Government Geologist expected, as a considerable quantity of water was tapped it would not be difficult to carry on future boring operations in the country. Victoria, which had a larger rainfall than we had, had paid considerable attention to water conservation. A Royal Commission had been appointed, and the Hon. Mr. Deakin, one of its members, was dispatched to the United States to obtain information that was likely to be useful to the colony. That gentleman’s report had been laid on the table of the House last session, and he had no doubt hon. members would find it very helpful to them in arriving at a conclusion on this question. Not only Victoria but the whole of the

Australian colonies were indebted to the Victorian Royal Commission for sending a gentleman of Mr. Deakin’s capabilities, and to Mr. Deakin for the report he had furnished. The report was more important perhaps for its mighty contrasts than for its comparisons. It spoke of thousands of acres in different parts of America being irrigated by mighty rivers that intersected and flowed over the country – rivers supplied by the Sierra Nevada and the Rocky Mountains, that had eternal reservoirs of water on their peaks, and only the genial sun was required for the water to be carried to the plains to till the mighty rivers and be utilised by the farmers when most in want of water. We had not these advantages in this country, and it was almost idle to draw beautiful pictures of what might be done by irrigation under those circumstances in Australia. Still, the report gave some comparisons and information that would be very beneficial to the colony. He had been much struck with a letter that had appeared in the *Leader* by Mr. Dow, the special reporter, who visited America with Mr. Deakin, with reference to windmill irrigation in America. (Mr. Krichauff—“ Hear, hear.”,) There were in this colony, in isolated places, gardens and vineyards where the system had been employed for a higher state of culture with most profitable results to those who had entered upon the undertaking. Still there were many other places where windmill irrigation might be carried on very successfully and profitably. He would also draw attention to the great benefits arising on the Adelaide plains from the system of lifting water by steam. Hon. members knew that Mr. Shaw partially irrigated about 100 acres of land on the Adelaide Plains most successfully. He lifted the water by means of a steam-engine, and dispersed it over his land at a cost of 1 1/2d. per 1,000 gallons. On that land he kept 100 head of cattle. Thus the carrying capacity of the land was increased from one to six head of cattle, because the land on the Adelaide Plains would not carry more than one sheep to the acre, taking the whole year, and taking six head of sheep as equal to one head of cattle he found that the 100 acres of land indifferently irrigated were more than enough for 100 head of great cattle. This would show what could be done by lifting the water and sending it over the ground by sluices and other contrivances. He had been pleased to see in a paper called the *Exhibition Gazette*, what might be done to a great extent by windmill irrigation, or by lifting water by steam power. The paper said :—“ The value of irrigation is generally acknowledged in the colony at the present time. Examples of splendid orchards and vegetable gardens are to be seen on the banks of the Torrens in the vicinity of Hindmarsh. At the Hindmarsh Nursery, owned by Mr. Reeves, the value of irrigation is plainly shown. Mr. Bathost in New Hindmarsh is gradually obtaining wealth from the soil, in the shape of an orchard and vegetable garden. Mr. F. Keeves has several men employed on a farm adjoining the town, and who will show a splendid sample of wheat at the Exhibition. The wheat was sown in January last, thus showing that two crops can be grown during the year by irrigation.” This showed what could be accomplished by water conservation in a country like this, with its fertile soil and genial clime. Mr. Dow, in writing to the *Leader* on windmill irrigation in the United States, said :—“ Before leaving the Sacramento district the State Engineer (Mr. Hall) advised us to visit a place called Florin, about 8 miles from Sacramento, where we would see an excellent example of irrigation with water raised entirely by windmills. As the train drew up at the little roadside station of Florin the view obtained of the surrounding district was an extraordinary one. On every hand windmills, their large fans contrasting somewhat oddly with the dwarfed character of the simple lumber-constructed standards upon which they were supported. The land in every direction is level, the fall not being more than about a foot to the mile, and the windmills stand at an average thickness of about one to two acres among comfortable orchard- surrounded houses which stud the scene at an average

rate of about one to 20 acres. ……..Calling in at one of the neat homesteads which are met with at short intervals along the narrow lands which intersect the small holdings of the Florin district we find the name of the proprietor to be F. Perey. whose operations may be taken as generally representative of what goes on in the district. The growing of small fruits, of which blackberries and strawberries are the chief, and the production of table grapes, form the leading industry of the district. His farm is 40 acres in extent, and altogether he has 15 windmills upon it, which is rather under the usual rate per acre, but some of his windmills he makes to work the pumps of two separate wells. ‘How does he irrigate? ‘Well, very simply,’ he replies, you see these grapes, there are 50 acres set 8 feet apart, and each row has a furrow run down its centre; well, after finishing my cultivation of the vines, I clean out these furrows, turn on the nearest windmill, and it pumps the water into the furrows just as long as I want to.’ His blackberries he also planted in rows 8 feet apart, with the furrow running down the centre in the same way as the vines, while the strawberries were grown on 4 feet wide beds, with water trenches between each. He grew four acres of blackberries, and five of stawberries. but some of the neighbors with smaller farms had more of their ground in blackberries, and less in grapes. “How did it pay ?” Well, he guessed, none of them were making fortunes on such small pieces of land, but everybody was very comfortable. He got 6 cents a pound at the canneries in Sacramento for as many blackberries and strawberries as he could raise. His strawberries, under the influence of irrigation, yielded continually from March, the second month of the spring, until November, the first month of winter. The blackberries, a large variety as big as plums, gave an average yield of four tons per acre, and the same average of grapes was obtained. This, I ventured to remark, did not seem a heavy yield of grapes as the result of irrigation, when from 3 to 10 tons were quoted as being obtained in the valleys near San Francisco without any artificial application of water. Well he guessed that might be or might not. He would like to see those 10-ton yields properly verified. All he knew was that Florin was a district that did not average over one ton of grapes to the acre without irrigation, and the increase from one to four he reckoned not bad as the result of the wells.” He had no doubt that the same profitable results could be obtained in this country, seeing that our soil was equal in fertility, and our water almost equal in quality to that in the United States. There was another way in this country in which many wells could be made to yield a greater supply of water and of better quality than at present. We had many streams that carried great currents to salt lakes or to the gulfs. The water at flood season could with little trouble be diverted from these streams into a depression on the plains below, and if the soil was sufficiently absorbent, great volumes of water would be absorbed and in the course of a very few years wells that had originally to be sunk 50, 70, or 100 feet would only have to be sunk 40 or 50 feet in order to get a sufficient supply. He would give an illustration of what had been done in the colony by the water being diverted. Hon. members knew that the country between Warnertown and the Lower Broughton was of a very arid description. When Mr. Fergusson had it, and afterwards Bowman Bros., it was necessary to cart water over the vast plains for the use of the shepherds. Afterwards, however, Bowman Bros, erected dams and weirs across the river—very inexpensive they were, but they stood there yet—and the water was diverted, and covered an area of many square miles. And although the water disappeared at a certain season it did not matter, for wherever the selectors sunk on the plains they obtained good water at shallow depths. Another way of conserving water was by headworks. Of course where the catchment area was very great and the rush of water was something enormous the expense of headworks was very considerable, because the works must be of a very substantial character to keep back the great volume of water that would be conserved. He did not advocate this on the ground simply that it would pay perhaps to irrigate cereals from its supply, but he did believe that in future a higher state of culture would be entered into where it would be imperatively necessary to make even that profitable that a supply of water should be at command. He believed the people who entered on higher culture would be willing to pay a fair price for the water. Anyone with an orangery, a vineyard, or an orchard, would willingly pay 2d. to 3d. per 1,000 gallons of water. It was only in certain seasons of the year that trees required watering, and there was no reason why from North Adelaide to Gawler should not be one continuous line of orangeries, orchards, and vineyards. We had the whole world open to us, and fruit could be packed and delivered in the London market, and sold more profitably, after all expenses had been paid, than they could be in our own market. We knew that our resources would not be equal to supplying the demands from the old world for many years to come, and it was necessary at the present juncture to turn our energies to something else than simply growing wheat. If this great scheme of water conservation was carried out there was no reason why we should not have a population between Gawler and Adelaide equal to one-tenth of that which existed in the whole colony. They could afford to pay Id., 2d., or 3d. per thousand gallons even to grow lucerne. By giving land exhausted by cereal culture a fair supply of water they could grow lucerne equal to the support of 10 sheep to the acre. That had been done and would be done again. (Mr. Gilbert—“ On certain lands.”) Many acres would not do for irrigation, but land equal in fertility to the Gawler Plains would well recompense the expense he had named. (Hear, hear.) In Victoria in 1882 a Bill was passed enabling the Government to form trusts, which should in turn form districts, and the consequence was that a great deal of good had been done. In 1882 there were 1,900 square miles of under 15 trusts in Victoria country. Wimmera, the oldest and most important, embraced an area of 1,280,000 acres. The total cost of the Wimmera water supply up to the present day was £139,000, and it was shown in a plan he held in his hand, and which he would lay upon the table, that there were no less than five different schemes on the Wimmera River, and many of the channels from the centre of the river extended to country not less than 70 miles. The country was thoroughly intersected by channels, and the people were able to cultivate their farms at less cost and with more profit, and a greater value was given to the land by water conservation than it would otherwise have obtained. Some time ago during the water famine in Wimmera it was difficult to get any money on the holdings, but now they were looked upon as being really valuable securities, and no difficulty was experienced in getting a loan at a low rate of interest. New South Wales had also given a great deal of attention to water conservation. A commission was appointed there on similar lines to that of Victoria, and the first report, which was very voluminous, contained a great deal of very valuable information. A Bill had also been drafted there on the same lines as that he was now introducing. The following circumstances were to be found related by the com­mission:—•\* Let me just give one striking illustration of the effects of irrigation in New South Wales, brought under the notice of the Royal Commission and reported in the *Sydney Morning Herald.* The illustration is specially valuable because it proves what irrigation is worth to the squatters or woolgrowers of the colony:— ‘ members of the commission visited two large stations belonging to Mr. Jas. Tyson, jun., situated a few miles from Hay. They there saw waterworks of an extensive character, which had until then only one or two of their number supposed to be in existence. Water has been carried from the Lachlan River to natural reservoirs in the back country. In one place it has been taken a distance of 26 miles. Natural water channels have been utilised for the purpose, but to make them available a canal 10 miles in length had to be cut.\_ One of the reservoirs that was filled by this means is three miles in diameter and upwards of 30 feet deep. On Mr. Tyson’s runs irrigation has been tried for pastoral and horticultural purposes, and with remarkable success. Experiments were made in two large paddocks, one measuring 5 miles by 6, and the other 6 miles by 8. Previous to those experiments being made the paddocks could not carry 4,000 sheep in a dry season. The manager said that the year before the irrigation he lost more than 1,500 of the 4,000 sheep that were placed in the paddocks. Of the 78 square miles contained in these two paddocks 27 were subjected to irrigation, and the result was that the carrying capacity of the enclosures was increased to 12,000 sheep, 120 cattle, and 200 horses. In other words, whereas in its natural condition nearly 16 acres of the country was required to keep a single sheep, less than one acre and a half was sufficient after only a third of it had undergone irrigation. According to the manager’s evidence the total cost of the work for the irrigation of the two paddocks was £1,200, leaving out of the calculation the difference in the wool between the two years. Could we do anything similar to that in South Australia? He thought we could. (Mr. Burgoyne— “ Where ?”) In the eastern country, on the borders of Queensland and New South Wales, more particularly up towards Queensland. He had seen the Diamentina and Cooper rivers, mightier in volume than the Murray, and if these could be confined say between the sandhills, even if they were absorbed immense good would be done. Any quantity of water could be found in waterless country by sinking wells. By the Government conserving water they secured the occupancy of the land and an increased revenue to the colony. In many cases those who now went out to our far pastoral lands were very much hampered by an insufficiency of capital with which to conserve water, and that was the reason that our flocks and herds had not increased in proportion to those of the other colonies. It would be found that the Bill made ample provision with regard to riparian rights, and the same trouble as there had been in California would not take place here. Before we commenced to conserve water on a large scale we ought to take the powers that the State ought to possess so as to prevent litigation hereafter. In California it had been a very vexed question and had resulted in a great harvest to the lawyers. This Bill, while protecting the owners of the fee-simple to the fullest possible extent empowered the State to take possession of and divert the waters of all running streams and lakes. Mr. Dow, writing in the *Leader* of what had occurred in California owing to legislation not preceding water conservation and irrigation, said “In establishing a system of irrigation here nothing will be found of more importance than starting fair with respect to proper laws in connection with water claims. In California the absence of necessary legislation on this point has been productive of unending trouble. It will be remembered that when we arrived at Sacramento on the out journey, we found the Legislature invaded with crowds of lobbyists eagerly interested in their respective claims as ‘riparian owners’ and ‘ appropriators’ while the settlement of the riparian rights question was the greatest and most exciting subject of the session. For years this subject has agitated the agriculturists of California, and it is not settled yet. California is a portion of America that has many points of resemblance to Australia and one of these is the fact that large blocks of land in many places have got into the hands of a few individuals. The phrase “riparian owners’ we found referred to the large landed proprietors and ‘appropriators’ to the farmers who wanted to tap the river at new points and were fought by the riparian owners whose aggregate accumulations of land had taken in extensive frontages to the watercourses, the water in which they claimed to have purchased equally with the land through which the water passed. ‘Yes said the counsel for one of the landowners whom we heard arguing in Parliamentary Committee on behalf of his client, we have purchased the water as part of the fee-simple of the land just as much as we have purchased the trees that grow on the land or the stones embedded in the earth.’ For want of legislation on this question the greatest confusion exists in California, leading in some instances to the farmers who occupy the lower parts of the streams going up in force and cutting the riparian owners’ dams so as to let the water down to their lands. Then of course follows violent encounters, lawsuits, and the whole situation is most unsatisfactory. At the time of our visit a large deputation, the outcome of a number of farmers’ conventions, was at Sacramento urging the Legislature to pass a measure ‘to declare the title to water in rivers, streams, and lakes, and the right to its use.’ That was exactly what this Bill sought to do. He would like to give some information with regard to the amount of money expended on water conservation in this colony. On works within hundreds there were 120 reservoirs with a capacity of 106,000,000 gallons, 17 masonry tanks with a capacity of 1,324,000 gallons. 66 wells supplying 168,500,000 gallons per annum, 10 well borings giving 28,000,000 gallons, or a total of 303,824,090 gallons. The total cost had been £83,380. The works outside hundreds, principally opening up our stock routes and allowing people to traverse the interior, comprised 20 reservoirs with a capacity of 646,000,000 gallons, 24 tanks with a capacity of 1,031,000 gallons, 66 wells giving 1,000,000 gallons per annum, 5 well borings giving 11,600.000 gallons, or a total of 679,631,000 gallons. The total cost was £63,600. He was sorry to say that the interest on the money expended on the conservation of waters within the outside hundreds was very small indeed, the revenue being only £2,134 per annum, or after deducting working expenses £724. This meant 1 per cent, on the outlay. The money expended by the Public Works Department, the Hydraulic Engineer, and the Adelaide waterworks, returned a little over 4 per cent. (Hear, hear.) The country waterworks under the Public Works Department only returned 1.3 per cent. The approximate mean per centage on the entire cost of all waterworks was 3 per cent. The following were the totals expended on water conservation from 1874 to the present time :— 1874-6, £953; 1875-6, £396; 1876-7, £4,082; 1877-8, £13,500 ; 1878-9, £7,744 ; 1879-80, £16,957 ; 1880-81, £12,079: 1881-2, £15,635; 1882-3, £57,900; 1883-4, £49.622; 1884-5, £67,915; 1885-6, £62,915,01- a total with the votes of the House, which amounted to £28,791, of £309,797. Under the Public Works Department £1,521,343, 8s. 2d was spent, or a total of £1,831141 expended on water conservation, which was just bringing in about 3 per cent. The Bill enabled the Commissioner to declare water districts where water had been conserved, so that the public would not as they now did in many cases get their water for little or nothing, but would pay a fair rate for the water. It was gratifying to him to be able to inform the House that with a very slight expenditure indeed, they had struck in that great depression in the centre of the colony a splendid artesian well supplying 100,000 gallons per day. It was considered by a number of people that irrigation by artesian wells was out of the question in South Australia, but if we found more artesian wells in capacity and quality like that at Hergott it would be a very important matter indeed. (Mr. Duncan—“ What is the quality ?’) The quality of the water was most excellent. The Conservator of Water informed him that the supply would be equal to irrigating about 300 acres of land and allow 6 inches per annum for it. The Bill was a very elaborate one, and had been very carefully prepared. The suggestion contained in the reports of Mr. Deakin and the New South Wales Com­mission had been noted, and where desirable had been taken advantage of. Clause 2 of the Bill provided that water districts might be proclaimed in proclaimed hundreds on the petition of ratepayers. Hon. members would see that the powers given under these clauses were very just. Clause 9 would prevent the possibility of the Act becoming inoperative through the negligence of the residents or from other reasons. Mr. Playford had criticised his scheme, but that hon. member when in office allowed some people at Port Germein to guarantee the interest on an expenditure of £7,000 or £8,000 on waterworks, and they had never paid a penny since. (Mr, Playford—“Not so much as that.”) At all events he never enforced the guarantee. (Mr. Playford—'\* Tried to. Did you enforce it?”) The present Government had enough to do rectifying the mistakes of previous Governments. (Laughter.) Some of the guarantors had gone away to other lands, and how could the Government enforce the guarantee on them? Part 3 described the constitution of the Water Conservation Board, which was to consist of five members, and if the district embraced within its bounds a municipality, district council, or drainage board, the chairman of such board for the time being should be ex officio a member of the Water Conservation Board. (Mr. Bews—“ It will never work.”) Clauses 14, 15, 16, 17, and 18 were simply formal. Part 5 related to the election of members of the board, which was very similar to that of district councils; and part 6 dealt with the board’s functions, duties, and powers. Clause 62 enables the board to effect its objects by entering upon land, constructing waterworks, and where necessary diverting the course of a running stream for purposes of irrigation. The powers given were very great, but not greater than a proper system of water conservation requires. Clause 63 allowed the board, with the consent of the Commissioner, to exercise its powers outside districts. This was done because an artesian well or other supply might exist outside the boundary of a district, for which it should be made available. Clauses 64 to 67 gave the board power to make by-laws, the Commissioner having the power to amend or annul them. Clauses 68 and 69 enabled the Commissioner to make preliminary advances to the board out of loan money if necessary. Clause 74 allowed the Commissioner to grant a loan where approved of, and clause 75 made the sanction of Parliament necessary for the construction of certain works. He would explain clause 76 by saying that when rates to the extent of £1,000 are collected in a district, it was just possible that half of these rates—£500—would be absorbed in working expenses, and they said that the other £500 would be equal to paying interest on a loan of £10,000. (Mr. Coles— “ But until the work is complete you can only ad­vance £1,000.”) Oh, no; certainly not. He would give the following statement to illustrate the amounts to be advanced on loan under the Bill:—If the whole colony (within hundreds) came under the Act, the roughly approximate value of the land within hundreds, excluding present districts under the Waterworks Act, and including both sold and unsold land, would be worth £53,320,000. The assessment on this would be £2,666,000, and the rates at 2s. in the pound would be £266,600. Consequently the amount the colony would be called upon to advance to the boards under section 76 would be £3,994,000. He would give them the example of a supposed water district in Central Yorke’s Peninsula, comprising the hundreds of Tiparra, Clinton, Kilkerran, Maitland, Cunningham, Wauraltee, and Muloowurtie. The total area of this district would be 643,000 acres ; estimated value, £1,257,400 ; assessment at 5 per cent., £62,870; rates on assessment at 2s in the pound, £6,287; amount to be advanced £89,300, less value of present waterworks £6,545= £82,755. The estimated cost of a reservoir in the Baldina Creek, with 20 miles of delivery pipes and channels to supply 100,000,000 gallons per annum was £13,000. The area commanded in the hundreds of Baldina, King, and Rees was 160,000 acres; value at 30s. per acre=£240,000 ; assessment, £12,000; rates, £1,200; amount to be advanced on loan, £13,000. (The Hon. T. Play ford—“”Would that give a supply to every section ?”) He did not know that it would, but it would give a supply to the area mentioned. He would also call the attention of hon. members to the fact that although the minimum rate was 2s., yet supposing a man paid £5 in rates he would be allowed water to the value of that amount, so that if the water were valued at 5s. per thousand gallons he would be entitled to 20,000 gallons, and for any further quantity that he might use he would have to pay at the rate of 5s. per thousand gallons, or at any other rate which might be fixed. Clause 87 provided that the Government should have control of the accounts, and where they advanced large sums of money this was only right. Part vii. of the Bill dealt with assessments, appeals against assessments, rates, and the recovery of rates, but these were merely formal matters. Under clause 106 they would see that the boards m~~ig~~ht declare rates without the consent of the ratepayers, but yet these rates might be differential, and hon. members would recognise the justice of this in the fact that a water channel might run through one man’s land, whilst another man would have to cart the water, say, three miles, and therefore ought not to pay as much as the first ratepayer. Clause 127 was an important one, because it provided a real safeguard to the Government in advancing money for the construction of waterworks. This gave the Commissioner power to let or sell land when rates were in arrear, and it was only right that the land should be held responsible for any money due. Then he came to part viii,, which simply provided that a district might be created within a district. That was to say, if there happened to be a large supply of water which could be used for irrigation a number of people could petition to be allowed to divert the water for that purpose, on condition that they paid a special rate. This he thought was desirable, because it would enable the use of water where available in increasing the productiveness of the soil. Going on to part ix., hon. members would see that by clause 141 the Government might order all lakes, rivers, and watercourses within a district to be under the control of the Commissioner. (Che Hon. T. Playford—“ And take them away from private owners ?’) Of course they would not be so dealt with all over the colony, and the power would only be exercised on the strictest enquiry, and when it was found that such a step was absolutely necessary in the interests of the public. Clause 150 would enable the Commissioner to transfer any rights of the Crown with regard to miscellaneous leases under lease for water supply to any board. Another special division of the measure was part x,, dealing with the construction of waterworks by private persons. This would permit any company or person to carry out schemes for the purpose of supplying any particular district. (Mr. Krichauff—“ Why not allow them to mortgage ?”) That was another question; but the hon. member would know that most of the schemes in America had been carried out under similar provisions. Clause l29 of part xi. was a necessary one, providing for the limitation of compensation in securing a free passage through any land; or if it were necessary to embank or divert water power was given to the proper authorities to take the land required. He was sure the House would see that the Government had made an earnest attempt to grapple with the difficulties existing in the country districts at the present time. ln the interests of the State he thought it was desirable that the Bill should be passed as early as possible, and he asked hon. members to assist the Government in making it as complete and beneficial as could be done.

On the motion of Mr. REES the debate was adjourned until Thursday next.

**WATER CONSERVATION BILL1886**

Legislative Council, 29 June 1886, pages 263-72

Adjourned debate on the second reading.

Mr. E. W. HAWKER said he had been grievously disappointed to find how little the Commissioner of Crown Lands knew about the Bill. The hon. gentleman had referred to the western district of the colony, and then to California with its mighty rivers rolling down from the snow-capped mountains which wanted only the genial sun required to make the irrigation works produce blackberries as big as plums. (Laughter.) He had given occasional hints as to what the Bill was, and had said that there was a similar Bill being drawn in New South Wales, and that there was a Bill passed in Victoria in 1882. He had told hon. members what had been done here in the matter of water conservation and what the cost had been, but as to the Bill itself he said very little, and he had come to the conclusion after reading the Bill through more than a dozen times that the Commissioner did not understand his own measure. What he had expected to hear was information about our present system of water conservation; where it had succeeded, and where failed, with the causes of the failure; whether there was any legislation in force here and how it had worked, and how the present measure was going to supply the want. He expected the Commissioner to say that he had received reports in regard to the measure from the Hydraulic Engineer and the Conservator of Water, and to give information as to the country examined and the supplies of water available. Personally he found that the only Parliamentary Papers there were on the subject dealt with diamond drill boring and wells and the cost of certain dams, and he had come to the conclusion that the expense of our water conservation had been enormous. The Commissioner had not said where the bill was drawn from. He had led hon. members to believe that it was drawn from the Victorian measure, but as there were no marginal notes he had not been able to compare the Bill with that measure easily. Hon. members would see that he attached a great deal of importance to this subject when he told them he had spent considerably over 100 hours of steady work since Friday last, and 13 hours of the holiday in considering the subject. (Cheers.) The Commissioner said he had taken notes from the Water Commission report of New South Wales. Well, he did not think the hon. member could have got that report This Bill was an exact copy of the Bill of last session. This Bill was laid on the table in November; the report of the Water Commission in New South Wales was laid on the table of the New South Wales House on December 17, and the volume itself was not issued from the Government Printer’s till January. If the Commissioner had got that report and seen a Bill suggested there a very much better measure would now have been laid before the House. He had received a copy of that report, and thought the Government would do well to place a copy in the hands of every hon. member. The Bill was a new and difficult one; and yet the Commissioner did not explain how the boards were formed, how the loans were obtained and secured, how interest was provided for and paid off, how private rights were protected, and how compensation was obtained. To those who had studied the question it seemed that the Government had power to take anything they liked. He would give a description of what he thought the Commissioner ought to have told the House, and he would first refer to the present system, because it must be admitted that that system must be defective if it was necessary to bring in a new measure. Under the present system there was work done by private enterprise, by the Surveyor-General, by the Railway Department, by the Hydraulic Engineer, by the Conservator of Water, and drainage done under the Surveyor-General. He had been able to find very little data except with regard to the Hydraulic Engineer’s Department—the most scientific department we had—and that he had obtained from the Public Works report. Hon. members had no information of all the work that had been done by private enterprise in making wells, tanks, and dams of all sizes; though Mr. Coles, in bringing in the Pastoral Bill last session had shown what an enormous amount had been spent on some of the outside stations. It was stated in the report of the Water Commission in New South Wales that 17,091 tanks had been sunk at a cost of £3,961,472, or an average of £232 ; and over 8,000 dams at a cost of £836,838, making a total of £4,796,310. In a paper laid on the table of the House it was estimated that about £500,000 would be paid to the lessees of the 1888 leases when they fell in. He thought he was not over-stating the matter when he said that the amount that had been spent by private enterprise in this colony in trying to obtain water was considerably over £2,000,000. The dam built at Werocata, a station owned by Mr. Bowman, cost over £4,000, and hon. members knew to what expense Sir Thos. Elder had gone with his steam scoops. The defect of the system of private enterprise was that a great deal of capital was sunk in wells from want of knowledge of the geological features of the country. (Hear, hear.) There were numerous wells sunk on the outside runs that had never been of any use. There were 60 wells on one station, only five of which could be used by sheep, and only one by man. As a rule the dams were not big enough to stand two years of drought, and being small the supply was not so pure as it would be in large ones. The next department he would refer to was that of the Surveyor-General. In Parliamentary Paper 99 of 1885 there was a list of works that had been commenced by the Surveyor- General, and handed over to the Conservator of Water. The defects of this system were that all the dams and tanks had been put in different places quite irrespective of any united scheme. In many cases they had been put down on a reserve simply because there had been a reserve there, and the people in the district had asked for the dam. They had been put down without any regard to the watershed of the country, and the consequence was that many of the dams had hardly any water run into them. In heavy floods they had some, but in ordinary rains they caught nothing. The reason was that in the Surveyor-General’s office the men while being first-class surveyors had no knowledge of hydraulics. Then there was the Railway Department, in which there had been numerous mistakes. The works were constructed by the Engineer-in-Chief and then handed over to the locomotive department. They consisted of dams for supplying water to the locomotives. These were made without the slightest regard to the surrounding district, or the town where the station was; and consequently, in many cases the dams had given out, because the people had been obliged to go to them for their water supply. As a rule, in making the dam provision was not made for any future requirements, and the evil of this was that a dam could not be enlarged so easily as a new one could be constructed. The water was pumped into an overhead tnk and then ran down into the engines. In a properly constructed scheme the dam would be made in those districts where the water would run down by gravitation, and not only supply the locomotive department but the neighboring town. There was the expense of the dam, of the pumping, of a man to pump the water , and of the overhead tank. This expense might be saved by having one big dam to which the Railway Department would contribute or buy the water by measure, and the district would be served by the one dam. At Snowtown there was a railway dam which had cost £774. There was also a well which had been sunk by the Conservator of Water for stock. The inhabitants had pointed out to himself and his colleagues that about two miles away there was a capital site on a reserve from which water could be obtained if a dam were made there. They sent in their application, and the Hydraulic Engineer said a dam could be made for £4,000, but that it must be done on the guarantee system. The people, however, had tanks of their own, and did not see their way clear to pay the money that was asked If there had been a careful inspection made in the first place considerable expense might have been saved. At Hawker also the Railway Department, who had constructed a dam and pumped their water into an overhead tank, had to supply the inhabitants with water at a very high rate, and eventually had to carry the water from Gordon by train. The Hydraulic Engineer’s Department had lately built a dam higher up from the creek, and the recent heavy rains had put l4 feet of water into that dam. The inhabitants, therefore, could now get good and pure water, whereas that which they had previously obtained from the Government dam was almost undrinkable. At Gladstone the arrangement was still more absurd. (Hear, hear.) The Railway Department made their reservoir lower down than the station, and had to pump the water up hill to the tank, whereas the town and station could have been supplied from the tank made above the station. He believed that this year the Railway Department had even had to carry the water from Crystal Brook. The Railway Department, when asked to contribute, said they would give £30 a year. When it was considered that the Government had to keep a man to pump the water, and they had the expense of the tank, it was absurd that they should have offered such a small sum. The Port Pirie works were designed by the Engineer-in-Chief, and carried out by the Hydraulic Engineer, and were, he believed, supplied from the west of the Flinders Range—partly from the watershed, and partly from springs. That supply had, he believed, given out this year. The cost of the work had been enormous, and the return was small. It was quite possible to supply that town from Beetaloo, and they could obtain a permanent supply at much less cost than had been incurred. At the Burra the Railway Department had to pump their water from a well. The corporation pumped their water from another well. Now the railway people were buying from the corporation, and one of the pumps was not being: used. At Mount Barker a dam was constructed by the contractors for the railway. It was bought by the Railway Department, reticulated by the Hydraulic Engineer’s Department, leased to the district council, and this year nearly drained by the Railway Department. These instances showed that we wanted some alteration in our present scheme of conserving water. Then he came to the Hydraulic Engineer’s Department. This was the most satisfactory of all, and its satisfactory condition was due to the efforts of a man the colony made a great mistake in allowing to go—Mr. Oswald Brown— who would make a world-wide reputation before many years. (Mr. Catt—“We could not keep him; he would not stop.”) He had no doubt he would have stopped if he had been properly met. (An hon. member—“ £5,000 a year would have kept him.”) He was well worth £5,000, but £2,000 or £8,000 a year would have kept him. The Hydraulic Engineer’s Department and that of the Conservator of Water seemed to run into one another some­what. The Conservator of Water seemed to report on a certain scheme, which was then carried out by the Hydraulic Engineer. The department of the Conservator of Water was not a scientific one, whereas that of the Hydraulic-engineer was, and it was very improbable that the Hydraulic Department would take the data and levels given by the Water Conservation Department without verifying them That practically meant a double survey. He found from the last public works report what had been done by the Hydraulic-Engineer’s Department. They had made the Port Pirie works, which had cost £56,000, and there was £104 available for interest. The Kapunda works cost £39,000, and there was a deficit of £180. These waterworks were a failure to a certain extent because the water was discoloured and the inhabitants would not use it unless they were forced to. Then the Port Augusta works cost £79,000, and there was £659 available for interest; Mount Gambier £26,000, £1,195 available for interest; Gawler £24,000, £1,400 available for interest ; or about 5 per cent. At Gawler and Mount Gambier; and the Mount Gambier rate had been lowered. Then there were the Adelaide waterworks, which had cost £876,000, with an income of £40,000. There were also the Teatree Gully works, which were small but had been a success. The advantages of the Hydraulic Engineer’s department was that it was a scientific one, and had first-class workshops, and naturally men so employed were improving every day. Then he came to the Conservator of Water. He took over a lot of the work of the Surveyor-General’s in constructing dams and wells both inside and outside of hundreds, and had charge of boring machines and scoops. He understood than under the department the scoops had been a failure, although on Sir Thomas Elder’s run they had proved a success. Looking at the cost of excavations it was enormous as compared with the cost of similar work done by private persons. He was much struck by an extract he had taken from one of the Sydney papers, which made a comparison between the cost of boring in New South Wales and the cost in this colony. They had two drills in Sydney which had cost £4,588 each, and they also had nine water augurs which had cost on the average £733 each, whilst our two drills had cost about £8,000 and £10,000 respectively. (Mr. Catt—" Oh no. That is from a New South Wales point of view.”) That might be so but he had called attention to the figures because he had not been able to get the proper data to make the comparison from a South Australian point of view. Then as to the cost of sinking. The water augurs in New South Wales bored 3,351 feet in 1,730 days at a cost of £3,556, or just on £1 per foot; the drills bored 1,749 feet in 467 days at a cost of from 7s. to 10s. per foot, so that the working cost of the excavating machines, including transport, was £4,209, and the depth bored was 5,000 odd feet; the time occupied was 2,207 days, and the cost per foot 16s. 6d. In South Australia the drills bored 1,373 feet in 724 days at a cost of £4 7s. 5d. per foot. They took two-thirds longer to bore 400 feet less, whilst the working cost was twelve times as great. That might be exceptional, and he hoped it was; still the difference of the work done in the two colonies was so enormous that he thought it was hardly due to the nature of the country. (Mr. Catt—“These are not official figures.”) Of course he had not been able to verify them. (Mr. Catt— “You could get them from the Blue-books.”) He had one or two papers, but they did not contain all the information. As regards drainage he had little to say, because he knew nothing about it. He thought he had shown that all these schemes were unsatisfactory, and that some remedy must be found. The question was so important that it ought to be looked upon as a national one, and the scheme should also be comprehensive. It was their duty to try to keep on the land the men who had paid for it, and that could only be done by supplying them with water readily. Our railways were a national scheme, and with water conservation properly carried out the land would yield produce for them to carry to market. Water conservation ought also to be a national question, because many of the works would be so large that it would be impossible for private individuals to undertake them. The distribution of the water might be carried out by the people as local trusts. Besides, if it were a national work a monopoly of the water would be prevented, and there would also be a greater likelihood of the works being more substantially constructed, and the Government would have greater security for the money they would advance as proposed under the Bill. His illustration of a national scheme would be that the Government should construct the reservoir and lay down the mains and provide for the inspection of the service mains. Such works could be looked after by local trusts, who would be in a better position to appoint farmers or residents to take care of the different parts of the scheme, and could conduct the supervision at less cost than the Government. They would distribute the water and collect the rates. Speaking of the Beetaloo scheme he believed the Government intended to rate the settlers living in the districts through which the mains passed, but they ought to say to them—“ You asked for this work and you must pay for the water whether you use it or not, because it would not be fair to make the general taxpayers pay for a scheme which is of no benefit to them.” The Government might suggest that the settlers should form trusts, and that they should be allowed to take the water where they liked. The scheme should be comprehensive enough to embrace the whole of the land in the colony that could be brought under tillage. Of course he would not expect the Government to find water for the pastoralists in this way. Naturally the most important question would be to consider what water would be necessary, and what supply would be available. On this point he would turn again to the Beetaloo scheme. By it there would be some 600,000,000 gallons of water to be disposed of. It was originally intended to supply the country as far as Kadina, whereas it would be capable of supplying the townships of Laura, Gladstone, Crystal Brook, Port Pirie, and Warner Town with an adequate quantity of first-class water. To enable this comprehensive scheme for the whole colony to be properly carried out it would be absolutely necessary to have one highly scientific man at the head of the department. He should also be permanent, because it would be impossible for each succeeding Commissioner of Crown Lands to have a knowledge of what was required. Considering the enormous amount of money spent and to be spent in water conservation it would be worth while to send to any part of the world in order to get a man equal to the position. The advantage would be that he would always be able to give the best advice to the Government, and they would avoid loss from indifferent construction, as in the case of the Port Germein works. (Mr. Catt—“That is not bad construction ; the works are all right, but the people won’t pay.”) Well, that was an exception, and under a comprehensive scheme this contingency would be provided for. Mr. Robinson in his report to the New South Wales Commission pointed out that the great defect of the Victorian scheme was the want of a qualified head, and it would be seen that Mr. Deakin proposed to remedy this. Mr. Robinson stated that there were certain provisions by which plans and schemes were to be scrutinised by an independent authority at the instance of the Government before being carried out, but that from statements he had heard he thought there was great danger that these provisions would fall into disuse, because the Government had not in their service any officer whom they could hold responsible for the advice upon which they acted in the approval of plans and the constitution of water trusts. It was possible, he added, on what he took to be trustworthy authority, for an engineer to devise a plan of waterworks upon which a district proposed to obtain a Government loan, to be called in by the Government to advise them, and he might also be afterwards engaged by the shire to carry out the works—that was to say at different periods of the negotiation he could act for the trust and the Government; for the mortgagor and mortgagee. The principle of self-government was one of such inestimable value, and the sacrifices which shire councillors made of their time and personal comfort to enable them to render voluntary service to the general public was so great, that Governments might be expected to deal with such bodies as water trusts in a generous spirit; but inasmuch as the future of a dry district would depend upon the stability and success of the waterworks constructed, to say nothing or the ability of the ratepayers to repay the loan to the general public, that it seemed of the first importance that the examination of the scheme submitted for Government approval should be of the most searching character, and be undertaken by the best engineer in the Government service. Hon. members would see by Mr. Deakin’s speech on Thursday last that the “essence of his Bill was that it repeals the present Bills; codifies them and all laws relative to water supply, whether for domestic, irrigation, or mining purposes; and re-enacts them with a view of bringing the whole subject to a focus in the Water Supply Department. The advantages of having one department with a skilled head were as follows: -There would be one department conserving water instead of four as at present; there would be only one staff employed in the conservation of water, and that staff would soon become highly skilled, and the knowledge possessed by their head and themselves would enable the Government to obtain reliable advice upon the merits of any scheme proposed by the residents of a locality in connection with their application for a loan. The advice would prevent the monopoly of water, and would ensure the works being sufficiently valuable to justify the expenditure of money, and the particular district would have a good guarantee for the soundness of the scheme. The first step would be to have a thorough examination of the country proposed to be formed into water districts, and the examination should not be made by mere surveyors, but by hydraulic engineers, who would be able to supply data that would be invaluable, not only to the Government, but to the residents in each district. Then if there was only one department people would know where to go with applications, and the great advantage of unity of design would be secured. There would only require to be one lot of workshops, and the work would be done cheaper and better, and there would be an end to jealousy between the departments. In making the examination in New South Wales the Government sent out over 5,000 skeleton maps and 560 circulars, and they had received 108 replies, and expected a good many more. He had telegraphed to Sydney for some of these skeleton maps, and in return he had received a great packet of them, together with some of the circulars, which asked a number of questions requiring information respecting the principal water sheds, fall on surface, underground water; number, position, and character of the wells, tanks and dams, and how often filled, and how long they lasted ; springs, creeks, amount) of rainfall, evaporation, and depressions capable of being converted into reservoirs. By the answers the New South Wales department obtained they would be able to do their work most thoroughly, and the information gained would be very valuable. The Commissioner of Crown Lands in his speech did not give any idea of what the Government scheme was likely to be; and, with the exception of the Baldina Creek, he did not point out any watercourses that could be dammed up. He had gleaned some information from a letter in the *Register* signed “ J.H.,” of Orroroo. The writer said—“ Between Orroroo and Johnsburg, 20 miles, there are six creeks with heavy floods in the season all flowing on and sinking on the plain.” And in the *Advertiser* there was a letter signed “D.,” in which the writer said a dam on the Pekina Creek might be made to store an immense supply. He noticed also that Mr. Copley had waited upon the Commissioner and pointed out that this creek could be dammed, and that the Commissioner remarked that he had obtained sufficient data. It would have been a good thing if he had given the House some of this data. A small staff of highly-skilled men would make an examination of the country within 12 months, and when it was finished the inhabitants of each district would be in a position to know what they could ask the Government to undertake. After the examination of the country it ought to be divided into districts, the boundaries being arranged according to natural features, and should contain at least one watershed, each district linking with the other so as to form one whole scheme. He would explain what he meant by the districts being linked to one another. There might be a district with only a moderate supply of water which would suffice for ordinary seasons. Adjoining it there might be another district with a good supply. Now these districts should be so connected that in a dry season, when the supply in the first district failed, the necessary water could be obtained from the adjoining district which had the better supply. As an illustration he would point to Port Pirie. At present it is supplied from a watershed and springs on the western side of the Flinders Range, and this year the supply has failed. Joining the watershed is the one supplying the Beetaloo reservoir, where a large supply of water will be stored, under the plan suggested. As soon as the present Port Pirie supply failed the inhabitants could get what water they wanted from Beetaloo. He did not mean that all the works should be started at once, but the advantage would be that whenever required there would always be a ground plan ready. For instance, a gold- field might be discovered in some district with a sudden influx of population, and then without waiting for examinations and surveys the Government could start the construction of waterworks. The supply in each district would be considered with reference to its sufficiency for domestic, irrigation, and stock purposes. The principle by which they would be regulated in constructing the works in these districts should be to supply the greatest amount of water at the smallest cost. This could only be done by constructing in the best way works to catch those enormous bodies which so quickly run away and disappear for ever. The works should be constructed, if not by the Government, at any rate under their supervision, and when completed they would be handed over to the local trusts to distribute the water and collect the money. Each work would be designed so that the whole might be grouped in such a way that one district should, in case of necessity, be able to draw its supplies from another one. Such an arrangement would also prevent inconsiderate schemes being undertaken. For instance, the Beetaloo scheme was rushed through the House last session in such a way that it was more by good luck than anything else that it now promised to turn out a paying scheme. (Mr. Krichauff—“ That is still questionable.”) After the districts had been mapped out the inhabitants in each could apply for a properly constructed and economical scheme, which would prevent an overlapping of the districts such as had occurred in Victoria. These works being constructed under the supervision of the Government, and being kept in good repair, would afford security for the money advanced for their construction. Coming now to the Bill, he might say it was one of the most difficult he had had to discuss. It was badly arranged, with a great deal of padding about rates and assessment. There was no order in it, and he quite understood that the Commissioner should have been unable to explain it. He had spent 100 hours over it, and he could spend another 100 trying to reduce it to order. (The Commissioner of Crown Lands—“ And then not know much about it, I suppose.”) The Commissioner had gone into a long dissertation on riparian rights. Well, the Bill did not define them at all. It simply said in clause 141 that the Governor may order that all lakes, lagoons, swamps, marshes, rivers, creeks, streams, and watercourses situated within any water district shall be under the exclusive control and management of the Commissioner. That meant that the Government should have absolute control over all the water in the district. In Victoria he believed the Government reserved all the frontages to the water throughout the colony, so that there was no necessity in their Bill for anything of the sort. The New South Wales Bill had a capital definition of water rights, as follows:— Section 5 of Part II. provided that to the Crown belong—(a) Water flowing in rivers, creeks, streams, and watercourses, whether permanent or intermittent, whether the whole or only portion of the land through or under which such flow takes place belongs to the Crown. (b) Water in lakes or other collection of still water, situated wholly or partially in Crown lands, (c) Water in lakes or other collection of water supplied wholly or partially by a river, creek, or stream belonging to the Crown, whether such lake, &c., be situated on, within, or under Crown lands or private lands, or lands partly belonging to the Crown and partly to private individuals, *(d)* All springs situated within Crown lands and all springs, whether situated in Crown lands or on private property, which have overflowed into or contributed water to any creek, river, stream, or lake belonging to the Crown, *(e)* The right to control for the purposes of the Act the land covered either permanently or intermittently by the water of any river, creek, stream, or lake. Then the rights of private individuals were defined by clause 6 as follows :—“The owner, lessee, or occupier of any land shall, in virtue of such ownership, occupation, or right of possession, have a right to the use of water as follows(a) The whole of the rain which falls on such land, with the additions or exceptions in clause 7. Clause 7 provided that where the owner has been for a period of not less than 20 years allowed the use free of charge or hindrance of a supply of water, whether permanent or intermittent, running from, or through, or situated in any other land, he shall have a permanent right to the use of such supply of water, but may only use it for domestic purposes or stock. (b) The owner of land adjoining any river, stream, or lake may use the water for domestic use and for watering stock, such supply being limited to 2,000 gallons for every mile of frontage to such lake or stream, (c) The owner of the land has the exclusive right to springs on his land if no other person, nor any corporation, nor the Government has acquired a right to such spring or Jto a portion of the water from it by uninterrupted use for a period of not less than 20 years. *(d)* The owner of the land has a right to all underground Water, but he must not use it so as to affect injuriously the supply in any well or boring previously existing in an adjoining property. Sections 5 and 6 were among the most important in the Bill, and must be accepted as the basis of legislation. In California and Colorado the future prospects of remunerative irrigation were seriously imperilled, either by a want of a clear definition of the State rights or the neglect to maintain those rights, or by pernicious legislation through which permanent rights to rivers have been wholly or partially transferred to private individuals. He would also point out that in Italy, France, Spain, and India, questions regarding water- rights have been practically set at rest by successful and beneficial legislation. The common law was that if a man had a well on his land his neighbor could dig deeper to get his supply of water, so that it depended on which of the two has the longest purse; but under the provisions of the New South Walea Act as he had shown, one man could not sink deeper to cut off pother man’s flow, and he thought this provision was right. In that Act a special clause dealt with compensation to those whose water rights are interfered with by the Government, but in our Bill this was simply left to the Lands Clauses Consolidation Act. To show the importance of this subject he would point out to hon. members an interesting riparian rights case in California mentioned in the *Advertiser* correspondence from San Francisco. The parties to this case were Charles Lux, Henry Miller, and James C. Crocker, versus the Kern River Land and Canal Company. “ The plaintiffs claimed riparian rights in certain watercourses in Kern county, while the defendants appropriated or diverted for the purpose of irrigation the water from its natural channel. The decision, which was in favor of riparian rights as established by English law, was rendered by Justice McKinstry, three of the judges concurring with him. Lux and Miller are butchers and drovers, and have a monopoly of the meat supply to San Francisco. They have an extensive hog-ranch at the outcome of Kern River, where its waters sink and convert a large area of country into a marsh and wallowing place for the swine. They have also secured riparian rights by purchase for some dis­tance along the banks of the river. The Land and Canal Company, by ‘appropriating’ water above them, have lessened the flow to plaintiffs’ hog-ranch, but at the same time by irrigation have converted thousands of acres of sandy desert into cultivable farms, and brought a large agricultural population together. By Judge McKinstry’s decision the company’s canals must be closed, and for want of irrigation these producing farms go back to the original desert waste.” The clauses in the New South Wales Act which he had quoted spoke for themselves, and showed that the Crown does not there resume all rights as our Bill does. He would especially point out that to the Crown only belongs the water of a river flowing through the land wholly or partly belonging to the Crown. The same applied to lakes not supplied by any stream, and also where lakes are private property the Crown has only a right to the water when they are supplied by rivers running wholly or partly through Crown lands. Concerning the resumption of lands the substance of the clauses in the New South Wales Bill were as follows:—“31. Board may resume by purchase water privileges acquired previous to this Act. 36. Board may acquire, purchase, or take on lease any land required for work. 37. Before proceeding with the construction of any work the board is to publish a notice three times consecutively in newspapers in the district stating the names of the owners of the land required, the situation of the land, and the acreage required from each of the various holdings, and the notice shall also specify the place and hours at which a plan of the required land can be seen. 38. The board shall serve a notice on the owner specifying the land intended to be resumed, asking what compensation the owner requires. 40. If the owner is absent or does not send his claim for compensation within two months of the last publication he is not to receive interest. 41. These last two regulations are to apply to the resumption of water rights. 77. Water trusts may acquire right of way by purchase or lease through any land, private or Government. If the person refuses to sell or lease, the land may be resumed by the Government on the recommendation of the board, and compensation be provided for.” He now came to the important question of taking possession of land or water, and here again there was a great difference between the two Bills. In this Bill, by clause 141, the Governor may order that all lakes, rivers, watercourses within a water district may be under the Commissioner. Clause 62 gave general power to boards to do almost anything with the land. By clause 157 private persons desirous of constructing waterworks may get permission from the Governor in council to enter on any particular land to make surveys. Clause 175 gave the Commissioner or board power to take land compulsorily under the Lands Clauses Consolidation Act. Under clause 176 the Commissioner or other person was not liable for compensation if the claim be not made within one year. The Victorian Bill was even more liberal and extended the terms to two years. As to compensation, the New South Wales Act provided that compensation may be claimed by any person having a right to water, where his supply has been diminished or rendered less useful by construction of any canal, well, or boring, &c., but he must prove the damage suffered. By clause 32 compensation is to be paid for any damage done by works done in pursuance of this Act, the person by whose authority the work was done being liable. By clause 83 the claim must be made within one month. In the New South Wales Act it was further provided that where a trust obtains land by resumption the amount of the compensation is to be calculated on the value of the land before the works were proposed, and not on its enhanced value. This was only provided for in our Bill by a reference to the Lands Clauses Consolidation Act, and not expressly set out, as was the case in the New South Wales measure. In a Bill of this sort which was intended to be read by farmers, everything should be as clear as possible. (Hear, hear.) He trusted the Government would get the report of the water Commission, and let hon. members read it for themselves. The amount of information contained therein might be imagined from the fact that it contained 9.000 answers to questions. There was one point in the Bill before the House which he could not understand, and that was the clauses referring to the formation of water trusts. Clause 4 stated “ The Governor may, subject to the provisions of this Act, from time to time, and at any time on a petition of ratepayers, do any one or more of the following acts oy proclamation in the *Government Gazette*:—He may constitute any portion of the province situate within proclaimed hundreds a water district for the purposes of this Act, and may appoint the first board for every new water district. He may define the boundaries of and give a name or number to every district. He may constitute any portion of any district, or of two or more districts, a new water district. He may alter the boundaries of any district, either by separating part thereof from, and declaring that it shall no longer form part of, a water district, or by adding to a district other land, whether theretofore included or not within the limits of a water district. He may abolish any board, or remove any member of a board.” Now in the next clause they found that half the ratepayers can petition for a new water district and set out the boundaries and total area. (Mr. Catt —“The same principle is adopted now.”) The clauses apparently applied to two different classes of water districts (The Commissioner of Crown Lands—“Wo.”) The Bill was badly drawn no doubt, and might not convey the intention of the Commissioner, but he defied anyone to say that these clauses do not constitute two water districts (The Commissioner of Crown Lands—“ You will excuse my understanding it.”) He did not think the Commissioner understood it at all. (Laughter.) The New South Wales Act was very fair in this matter of appointing water boards. There was to be a petition from five landowners; the board enquired into it, and defined the boundaries according to the natural features of the country, which was preferable to a haphazard mode of laying out districts. He knew the present scheme provided for joining two districts where required, but the New South Wales clause obviated the necessity of such a thing, which was better still. When they remembered that the Commissioner can under this Bill advance money up to £10,000, it showed the necessity of arranging the districts in the best manner possible. (The Commissioner of Crown Lands—“The Commissioner takes the security of the land before advancing the £10,000.”) Then in this Bill there was no classification of water, which he thought should be divided into water for domestic purposes, stock, and irrigation, as well as for motive power. Then with regard to loans. In the New South Wales Bill where a loan was required, the trust would apply through the board setting forth the particulars of the amount required, etc. The board would enquire and if it reported favorably the Government would advance the money or authorise the raising of a loan, and might guarantee the interest of such loan. They were protected against wasteful expenditure by the report of a skilled officer. In both the Victoria and New South Wales Bills there was a penalty for borrowing without authority, the penalty being that the members of the trust would be personally liable. That was far better than the South Australian plan, whereby a loan thus made would be simply void, and there would be no penalty as regards the board who borrowed. In the Victorian Bill a sinking fund had to be established. The Government might advance not more than £500 to the trust until the loan had been negotiated. The machinery for raising a loan in the South Australian Bill was first by petition of the ratepayers for the proclamation of a district, or the Governor might proclaim a district without petition, and vest the powers which a board would have in the Commissioner. There was no limitation to the Governor’s power in that respect. (Mr. Catt— “ That is very necessary.” The Commissioner of Crown Lands—“ It is perfectly clear.”) He knew the Commissioner did not follow him. The Commissioner did not know the Bill as well as he did. The Bill was almost identically the same as that of last year. (The Commissioner of Crown Lands—“ Very near!”) He could understand Mr. Catt standing up for the Bill as it was the outcome of his own brain, but he must be open to conviction. The best thing would be to take the Bill back again, and draw up a fresh Bill on the New South Wales lines, which were the lines followed now by Victoria. He had gone into the subject thoroughly, and was convinced that was the right thing to do. If the Bill were forced on he should be compelled to endeavor to effect such alterations in committee as would entirely change the aspect of the Bill. In many respects the Bill was very far from clear. In clause 68, referring to the amount which the Commissioner could advance, the word “each” in connection with the works was very obscure. He understood it to mean £200 advance to each of five works. Then later on there was a provision for assessment, which assessment was by clause 105 to be forwarded to the Commissioner. It was not very clear why clause 69 required particulars to be sent to the Commissioner, but clause 72 did not require any plans to be forwarded. The works might be utterly worthless. Now New South Wales and Victoria laid great stress upon the approval of the works before the money was advanced. If more money was wanted the Commissioner might from time to time advance more moneys as wanted, clause 75 limiting the amount to £10,000. That was too high a figure to which to extend the powers of a Commissioner who might have no special knowledge of the subject whatever. It was an enormous amount in the absence of the full particulars and plans required by the Victorian and New South Wales Bills. (The Commissioner of Crown Lands—“Plans are provided for all through.”) That was not clear. (Mr. Catt—“It can if necessary be made clearer in committee.”) It ought to be clear now. We must pass a Bill that would fit the country and not try to fit the country to suit the Bill. Then as to clause 118, giving the board power to levy rates. There was no power to levy the rates until the water was actually supplied. (.The Commissioner of Crown Lands—“Still the land is responsible.”) That is what he wanted to avoid. How were they going to take the land from the men? The past history of the colony had been that when the pastoral lessees could not pay rents were remitted, and so it had been with the farmers, and history would repeat itself again if the attempt were made to sell the land for water rates. Then as to the plans. All plans ought to go out from the head office. The work was of a special class, and the plans must be prepared by men having special scientific knowledge. As a case in point he would refer to the Torrens dam, where insufficient sluices were at first provided by the City Surveyor, and the whole scheme had suffered by the want of proper skilled assistance in the design. Now, the Beetaloo dam was a splendid piece of work, but it was designed and constructed by those who made that class of work a specialty. As to the mode of assessment he would like to know what was the object of fixing the assessment at 5 per cent, on the value of the freehold ? (The Commissioner of Crown Lands—“On vacant land.”) If it was to compel the freeholder to sell he could understand it, but the Commissioner had not said that was the object. The mode of assessment was taken from the District Councils Act, but with this difference—that in the latter Act the assessment was to be made “at the average annual value clear of all outgoings.” He believed the provision in the present Bill was simply a bit of bad drafting. Then, too, whereas under the District Councils Act a special rate must be authorised by a meeting and agreed to by two-thirds of the votes given, this Bill provided that it should be a bare majority of the votes given. Clause 136 of the District Councils Act expressly said that a special rate should not with any other rates be raised beyond the amount of 2s. There seemed to be no limit under the Bill. If he was blamed for having detained the House so long the responsibility was on the Commissioner of Crown Lands—(laughter)—who had given him considerable trouble by not showing what had been done in the past, and by not having the marginal notes inserted in the Bill. But the subject was of vast importance, and if what he had said and hoped to do in bringing in a new measure would do anything to prevent a recurrence of the disasters we were suffering from his time would not have been spent in vain. (Cheers.)

On the motion of Mr. CATT the debate was adjourned till Thursday.

**water conservation bill 1886**

**Legislative Council, 1 July 1886, pages 297-303**

Adjourned debate on the second reading.

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Mr. CATT congratulated \*Mr. E. W. Hawker on his excellent speech, and said that while he did not agree with the conclusions at which he had arrived on many points he thought the information he had collated would be of considerable assistance to the House in considering this important Bill. (Hear, hear.) The hon. member was, however, unnecessarily rough on the Commissioner of Crown Lands, for he was sure that the Commissioner understood not only the Bill, but the subject, and when the measure became law in a somewhat altered form the Commissioner would deserve thanks for the interest he had taken in the matter. Mr. Hawker had said that the Commissioner ought to have stated the result of past operations in the colony. This, however, was unnecessary, for the information had been given again and again, and appeared on the Blue-books. Indeed, the hon. member had gone to the other colonies for information instead of seeking for it here. The hon. member had further said that the Commissioner ought to have had a report on the measure from the Hydraulic Engineer and the Conservator of Water. Well, he was sure that the Conservator of Water had thoroughly studied the subject, not only as regarded South Australia, but in the light of information he had obtained from New South Wales and Victoria, and he was well able to show the House the direction legislation should take in South Australia. (Hear, hear.) He should imagine, too, that the Hydraulic Engineer had had something to do with the measure, though it appeared to him that his duties were more in reference to carrying out large schemes of water conservation for towns. Mr. Hawker also said the Commissioner should have explained how boards were formed, loans were obtained, and interest was paid. Well, these matters were so plainly stated in the Bill that he could not understand how the hon. member, who had read the Bill through a dozen times, could ask for the information. He had also said that the Commissioner ought to have indicated places where water conservation could be carried on. Any hon member knowing the country as well as the Commissioner did could name 20 or 40 places, but it was not necessary for him to load his speech with this matter. (Hear, hear.) It had also been said that the arrangement of the Bill was bad, but personally he could not see how it could be improved. Then the hon. member had said that the Surveyor-General should have had a plan of operations before beginning to spend money for water conservation. It was a long time ago that the Surveyor-General sunk wells and dams, and then it was simply to meet a long-felt want in certain localities, and to say that at that time the Surveyor-General should have had a plan as to what should have been done was to use a far-fetched argument. The work had been well done by the department. Private individuals had sunk wells where they had been a failure, and the Government could not always expect to be successful. They would not have been successful even if a geological examination of the province had been taken before the wells were sunk, because no geologist could indicate the place where water would be found in wells or boring holes. The hon. gentleman was so severely critical as to find fault with the Public Works Department, the Hydraulic Engineer’s Department, and the Railway Department. In fact he gave no credit to the officers at all except to the Hydraulic Engineer. He had said that if Mr. Oswald Brown had been retained we should have had a highly scientific man at the head of affairs, who would have carried on water conservation under much better plans that those at present in operation. No doubt he would have been a valuable officer, but when he had once made up his mind to leave the colony nothing would have retained him, except perhaps £5,000 as an hon. member had interjected, which the Government would not have been warranted in giving him. (Hear, hear.) Mr. Hawker, by inference, found fault with everything that had been done, and blamed the Conservator of Water for the steam scoops which he said were a failure. In the first place the Conservator of Water was was not responsible for the ordering of the scoops, and in the next they had not been a failure. The first reservoir sunk by steam scoops was at Ketchowla, and this was done—and the men had to be trained for the work—at Is. Id. a yard. That surely was not an extreme price. No doubt the expense of sinking had been high in some cases, but then there had been great difficulty in getting pro­visions to the men and water for working the machinery. It was, however, wrong to say that the steam scoops were a failure. He was told that one reason why they were not used so much as they might be was that employment might be found to a larger extent for the unemployed. The hon. member went on to institute a comparison between work done in New South Wales and South Australia, and as an illustration referred to two diamond drills imported to South Australia many years ago. The extract was evidently written by some one who was not disposed to put matters fairly before the public, and it was not fair to take an article of that sort to show the relative value of the work done in the two colonies. The extract referred to two drills, one costing £8,000 and the other £10,000, which had done work at so much a yard, and stated that the machinery in New South Wales had done the work at one- fourth of the cost. The hon. member was unfair in that he took the most expensive work done in South Australia—the Clayton bore—where men had to be kept for some years with a small machine, and great difficulty was experienced in supplying them with provisions. The £10,000 drill was imported by Sir William Morgan’s Government, on the advice of Mr. Brown. It was afterwards used in Adelaide and then sent to Wilmington. It was an excellent machine, but too expensive to send to bore for water. The other drill was imported by the same Government. Nothing so expensive had been imported since; much better work had been done by other machinery, and if the hon. member wanted to make a fair comparison he should have taken the results accruing from machinery during the last five or six years, and not have gone back to machinery of such an expensive character as that indicated. The hon. member might fairly have quoted from a South Australian standpoint. (Mr. E. W. Hawker—“We must have comparisons.”) The comparison was an unfair one. The hon. member took the most expensive work, and compared it with some of the beat work done by the best machinery in New South Wales. (Mr. E. W. Hawker—“ Does the hon. member know that boring is done at 5s. a foot in Victoria ?”) It had been done very much cheaper than that in South Australia. (Hear, hear. ) He had been literally astonished to hear the hon. member say that the expense of water conservation had been enormous, seeing that only £1,500,000 had been spent on this important work. (Hear, hear.) Although a few mistakes had been made our work must have been fairly well done, because the return was 3 per cent. on the money spent. (The Commissioner of Crown Lands—“A little over.”) Seeing that trying country had to be contended with that was a capital return. The hon. member himself said further on that water conservation was as much a national question as the construction of railways. We had spent £10,000,000 in railways, and if we had expended the same amount on water con­servation—as we ought to have done—our railways would have been paying more than 5 per cent., and would have been a much greater benefit to the community. (Hear, hear.). In India the Government first of all allowed private companies to carry on irrigation works, but after a year or two they took some of them and carried on operations themselves. Hon. members would see the importance that was attached to water conservation in India in comparison with the question of railways. From the date of the Government control of irrigation works in India, from 1867-8 to 1877 8, the large sum of £10,569,935 was spent in irrigation works, as against £18,636,321 expended on railways. (Mr. E. W. Hawker—“ Look at the enormous popula lation.”) With our small population we had spent £10,000,000 on railways, and if we had spent £6,000,000 on water conservation we should not be suffering as we were at present, or fear that our prospects were blighted, because we should not have good returns in some parts of the colony. The hon member went on to say that there should be one head, who should be a highly scientific man, whose position should be permanent, and by inference said that the boards should not have the power of formulating any plans of operation without consulting that officer. If he understood the Bill it provided that the board should have their own engineers, who if the scheme was an expensive one had to submit their reports to the Commissioner. He took it for granted that the Government would have a competent officer who could express an opinion as to whether such works shall be carried out or not. Power was even given to the Commissioner after the work was com­menced to take it out of the hands of those carrying it out if was not being done properly, and do it himself. Every care was taken in the Bill to see that money was properly spent under properly qualified officials. He certainly agreed with the hon. member that it was a mistake that the question of water conservation should be dealt with under two different departments. The sooner we had one department, and one recognised Ministerial as well as permanent head, the better it would be for the country. He had known one Minister to send an officer to report on a work two or three times, and on a new Government taking office an official from another department had been sent to report on the same work, though the reports were already in the office. The hon. member inferred that the boards should not be entrusted with the powers given them by the Bill, and that the work should be done by the Government. He thought that would be a great mistake, and the better way would be for the Government to carry out large works, such as the Beetaloo water scheme. He did not see, however, why two or three boards should not unite and carry out works of that kind. Ample power was given in the Bill for the Government to divide a place into districts and insist on was given the people being rated. This was a capital idea, which he believed was originated by the Hon. Mr. Playford. That brought him to the question of whether it was wise to insist on the works paying on their initiation. The Bill provided that districts borrowing money should pay 5 per cent, from the time of borrowing. This was a great mistake, and would cripple our future operations if insisted upon. It was not done in any other country where works of this kind were carried on. (The Hon. T. Playford—'‘Not in Victoria, for instance.”) Mr. Deakin said that for the first five years they did not expect people to pay interest on the money. Mr. Culcheth, the inspecting engineer, who was over here from Victoria some time ago, said— “If the Government wishes to encourage irrigation in the way suggested it must be prepared to advance money for much longer than the first year.” In the report of a Select Committee appointed in 1879 to enquire into Indian public works it was stated that “It is generally admitted that irrigation works in

India unless constructed. . . . under very favorable circumstances in districts where the people are accustomed to irrigation from rivers, cannot be expected to pay for several years after they are in operation. The Ganges Canal was 14 years in operation before it paid 4 per cent, on its simple capital. Colonel Crofton, late Inspector-General of Irrigation in India, appears to think that 10 years is by means an unreasonable time to elapse after an irrigation work is put in operation before it can pay any interest on its cost. And Colonel (now General) Strachey . . . gave it as his opinion that it was not likely that so much as 5 per cent, would be realised within 10 years on the capital sunk in any but the smallest works of irrigation. And Colonel Baird Smith in reporting on the proposed Boston Canal — the present Sons Canal — took it for granted that the works would not be self-supporting until 16 years after they had been opened for irrigation.” In India it was not expected that the works would pay in anything like the time indicated in Victoria, where Mr. Deakin expected returns in five years. Here we were going to charge 5 per cent, interest at the outset. If we were going to insist on that principle he did not see much prospect of carrying on irrigation works with any success in South Australia. He would suggest that the charges should be 1 per cent, for the first year, 2 per cent, for the second year, 3 per cent, for the third year, 4 per cent, for the fourth year, and 5 per cent, for the fifth year. By this the Government would not really lose, because 5 per cent. was 1 per cent, more than we actually paid at the present time for the money we borrowed, and the extra 1 per cent, for and after the fifth year would enable the Government to recoup themselves for the money lost in the first four years. He recognised that this was not so liberal as we might be, but in our present state we were not in a position to offer the money on more liberal terms, and he had no doubt those who went in for irrigation works would be prepared to pay a small percentage on the outlay. While the question of direct financial success was a test that should be applied under present circumstances, inasmuch as we had not the money at our disposal that we could lend without any return, there were other great results that were bound to accrue, and amongst these were increased production, which meant increased work for our railways, and the added value given to lands served by irrigation. Mr. Deakin pointed out a number of instances in which the value of land had been largely increased by means of irrigation. Land not worth 10s. an acre prior to irrigation works being commenced had been raised in value to £5, £6, £8, and £10 in value by the works, and in some cases land worth £2 and £3 had been raised in value by the same means to £30 and £40. (The Commissioner of Crown Lands— “ Hear, hear.”) These were facts that should not be overlooked. If the Government by irrigation could add a material value to their own lands that would be some return for the outlay. Then there would be an increase of population. It was a well known fact that where irrigation works were carried on a large number of people were employed. It was no use for a farmer to attempt to irrigate 1,000 acres by his own aid and that of one or two men. Where we had one family on 1,000 acres we might by means of irrigation have 20 families, and these 20 families would produce better results on blocks of 50 acres each than one man now produced on 1,000 acres, and that must add to the prosperity of the colony. (Hear, hear.) He did not wish to follow out this line of thought, because he recognised that the time for action had come, and he would like to see the Bill become law as soon as possible with the amendments that he thought were necessary to be made. We must deal with this question It was no use postponing it. It had been postponed too long, and to try and shelve it would be an iniquitous thing to do. It was the all-important question for the future, and if members waited for a perfect Bill they would never get one. Let members take the measure as it was and do the best they could with it. With some of the amendments indicated by Mr. E. W. Hawker he agreed, and he would help that hon. member to carry them to a successful issue. He recognised in the Bill an old friend, but it was an old friend with a new face. It contained new provisions which he regarded as improvements and this was to be expected, as there had been two years for consideration since he first introduced a somewhat similar measure. There were, however, one or two clauses with which he was not so well pleased. The Bill provided that one-half the ratepayers might petition, and the measures of 1883 provided that two-thirds must do so. He was not prepared to say whether the number should be two-thirds or three-fifths, but he thought there ought to be a decided majority, as it was not right for the Commissioner to have to decide between 20 persons on one side and 20 on the other. When the proper time came he would move to make the number three-fifths instead of one- half. It might be said that the Bill was correct with regard to special works, as one-half the ratepayers had to represent two thirds or three-fourths of the property in the district, but that was not the provision with regard to the formation of a water district, in which case the petitioners ought to be in the majority. He would like to hear from the Commissioner of Crown Lands why it was provided that two of the members of the board should be nominated. He knew this was in the former Bill, but he thought that where the people were to be rated up to the fullest extent, paying full interest on all the money they had, they should have full control over all the money spent. It might be said that the Government must retain some hold of the money—(the Commissioner of Crown Lands— “ Hear, hear”)—and if it were absolutely necessary he would waive his objection to the provision. At the same time, as we allowed district councils to elect their councillors, he thought water districts should be allowed to elect their representatives, as they would be rated to pay the whole of the interest on the money advanced. (Hear, hear.) The Bill gave the power to the ratepayers in water districts to levy a rate of 2s. in the pound. The Bill of 1883 provided for 6d. in the pound only. At first sight he was disposed to object to the larger amount, but it occurred to him that in order to allow these boards to do anything like effective work they must have a certain amount of money at their disposal, and unless the proposal of the Government were agreed to all the efforts of the board might be rendered nugatory by a few ratepayers. He would therefore support the Government in this alteration. It seemed to him a mistake that all the members of the board should retire at once just when they had acquired the necessary experience. It did not follow as a natural sequence that the Government would nominate the same two men again and the two nominees might not be disposed to be renominated. If all the members of the board retired at the same time all the valuable experience they had gained during their five years of office might be lost. It would be better for the retirements to take place something after the style adopted in the case of district councils. There were several minor points which might be dealt with in committee. He was glad to find that the Bill had been introduced so early in the session, and he trusted that hon. members would give it the consideration its importance demanded, and that it would soon become law. (Cheers.)

Mr. KftlCHAUFF would also support the Bill. He did not agree with Mr. E. W. Hawker that we should adopt a comprehensive national scheme of water conservation, first because we had not got the money, and secondly because in his opinion it would be im­politic to establish such a scheme. Then we had not got the water, and it did not pay to carry out too large a scheme. We must learn to walk before we could run, and it was our duty to profit from experience gained. We must certainly see that the expenditure would enable crops to be eventually grown on the land irrigated. The greatest caution was necessary, and any irrigation scheme must be gradually established. The first cost of irrigation must not be under-estimated, and he agreed with Mr. E. W. Hawker that interest should not be charged on any works from the very first year. As long as the works were actually in progress no charge should be made, and for the next three, four, or five years only a small rate of interest should be charged. We must not forget that the State derived great indirect advantages from a scheme of water conservation. To his mind it had been proved that comparatively small schemes were more economical than large ones. If we had open channels of any size to carry the water for long distances there would be numbers of bridges to be erected, and there was a limit to the distance that water could be carried unless it were taken in pipes. There was an enormous loss by evaporation always to be taken into account. (The Commissioner of Crown Lands—\*' Very often two- thirds.”) It was stated, he believed, by the state engineer of Colorado that one million cubic feet of water if conveyed through pipes could be made to irrigate 20,000 acres, but if otherwise conveyed it would only irrigate 10,000 acres. Mr. E. W. Hawker had referred to what had been done in the other colonies, and had said that we had carried out water conservation at too great an expense. He believed that we had made some mistakes, but the very same thing could be said of our neighbors. (Mr. E. W. Hawker—“We profit by their experience.”) He did not know that that experience had been conveyed to us, but if we had paid too dearly for our whistle in the shape of the implements we employed, as he believed we had, they had done similar things in Victoria. (Hear, hear.) The cost of storing water in Victoria, including the estimate of the Waranga Basin and its supply channel, and taking the Yan Yean at two-thirds of the actual cost, owing to the excessive rate of wages at the time of its construction, had been as follows per million cubic feet :— Waranga Basin, £40 ; Yan Yean, £98; Malmsbury, £215; Spring Gully, £311; Stony Creek, £332; Barker’s Creek, £338—average of sites, about £220. If used for irrigation in this way the cost per crop of mixed cultivation would be 27s. 6d., which would be altogether too high in most instances. Therefore he could not agree with the hon. member in blaming our Water Conservation Department so much. (Mr. Hawker—“ I only stated what has been done and want to avoid future mistakes.”) In Colorado a reservoir of an area of 427 acres, where the greatest depth is 33 feet 8 inches, is capable of irrigating from 11,000 to 12,000 acres, but then we must consider that the reservoir is filled there several times a year. It seemed to him almost out of the question to think of constructing reservoirs in level country by excavation and embankment. It could only be done profitably on a very small scale; if attempted on a large one, with labor at present rates, it was not ever likely to be payable. In considering the question of pumping up water from the Murray the interest must be calculated for the whole year, even if used only for a few months. According to the state engineer of Colorado it would cost on an average about 7d. per foot to raise 1,000,000 cubic feet, or £3 per 100 feet, with coals at £1 per ton and an average engine of 50-horsepower. He believed coals could be obtained here generally at that price. He hoped that in his reply the Commissioner of Crown Lands would be able to give them some information as to the orders to be sent out for pumping machinery to be erected at Morgan. (The Commissioner of Crown Lands— “ Hear, hear.”) The Commissioner told them the Bill would protect riparian rights, but it did not seem to do so. (Mr. E. W. Hawker—“It is provided for in the Lands Clauses Consolidation Act.”) Then it would be better to have some of the clauses embodied in this Bill. He agreed with Mr. Hawker that many difficulties had arisen in California regarding riparian rights, and when he was there some very large lawsuits were pending on this subject, the decisions—as was so often the case here too—not having proved final. He believed the law of England applied to South Australia, and if so it would be a serious obstacle to water conservation. The law simply appeared to be *sic uti aqua ut alienum non laedas*, and according to it every riparian owner has a right to what may be called the ordinary use of the water flowing past his land for domestic purposes and cattle. If a river or creek not navigable flows through private land, the owner is entitled to ownership of the bed of the river to midstream in South Australia. If, however, such a creek is dammed back, any proprietor below the dam may object, and claim compensation, or may destroy the dam. It was certainly of the greatest importance that they should take the bull by the horns and at once try to settle this difficult question of riparian rights. It was also of great importance that an efficient hydraulic engineer should be appointed by the Government capable of selecting sites for reservoirs, estimating their cost and capacity, and judging whether loans should be made on their security to the water trusts. It was absolutely necessary to have engineering skill in the construction of dams and embankments, and he could not agree with Mr. Deakin that temporary inexpensive works should be erected. They would be dangerous, and no security to the State for loans. Of course private individuals might, as in California, put up temporary structures on their own land. Mr. Geo. Gordon, a civil engineer in Victoria, who took a great interest in irrigation, stated in a recent pamphlet that water storage costing £14 per million cubic feet would, in his opinion, be quite remunerative, and could be given out at 5s. or 6s. an acre. He believed that could be done in many instances here. He believed the Nullabor Plains would not only be excellent pastoral, but also the best agricultural country on the west coast if water is found, and he only hoped Mr. Oswald Brown’s opinion would prove correct, that the waters ,from the large basin of the interior must sink below the surface and reappear near the shores of the ocean. (The Commissioner of Crown Lands — “Hear, hear.”) He congratulated the Commissioner on his success in the artesian well at Hergott. (Mr. E. W. Hawker — “ Will it be permanent?”) He had no doubt about it. (Mr. Hawker — “I heard it was failing.”) The natural artesian wells in the north were the best proof of its permanence—(the Commissioner of Crown Lands—“ Hear, hear”)—and ii, as the Commissioner anticipated, 300 acres can be watered by it, it will be a great success. He had tasted the water himself, and found it splendid. It had no taste at all. (Laughter.) The stream was as thick as his arm, and appeared as strong as one he had seen at Honolulu, which supplies the whole town. He believed it was permanent, and that we should have enough for the wants of the neighborhood and 50 miles beyond. He supported the second reading of the Bill. (Hear, hear.)

On the motion of the Hon. T. PLAYFORD the debate was adjourned till Tuesday next

**WATER CONSERVATION BILL 1886**

**Legislative Council, 8 July 1886, pages353-5**

Adjourned debate on the second reading.

Mr. HANDYSIDE said it would have been better if the Government had deferred bringing in the Bill until they introduced the Shire Councils Bill, as it would then not be necessary to form water districts as provided for under the present Bill. The only way to develop our northern and dry country was by the conservation of water or by well-sinking. Well- sinking was the best way of securing water when it could be done at a reasonable depth, but the experience of settlers in some parts had been that it was often very expensive, and that the water when obtained was unfit for use. Besides damming creeks and sinking tanks a system of double dams might be adopted here. When the supply in the lower dam, by evaporation, soakage, and what was used by the stock, ran short, water could be pumped from the upper into the lower dam by horseworks, which would give equal to a double supply in that dam, and it might last all through the summer, because the area for evaporation was lessened. The same principle might be adopted with tanks, instead of having large reservoirs as at present. He had had considerable experience in the conservation of water, both in dams and well-sinking, in back country in farming stations. The obtaining of water was not the only thing to be looked to in well-sinking. Attention must be paid to the position of the country, and to its capabilities and facilities for depasturing stock. In dam-sinking regard must be had to the catchment and to the holding ground, and it must be seen that the soil was not salt, so that the water was not spoilt. Mistakes were frequently made in this respect, and at Hergott a dam had been sunk by the Government in which the water was unfit alike for engine and stock purposes. He had followed the Commissioner of Crown Lands in his speech from the Rocky Mountains to California, the Lachlan, Wimmera, Cooper’s Creek and Barossa. He did not know where the Commissioner has obtained his information as to the Lachlan country, but he had known it personally for 25 years, and it was certainly very much better than as describer by the Commissioner. When he first knew the country it was not capable of carrying

sheep in the summer time, but a number of settlers joined together and cut a canal from the Lachlan to the Willandra Creek, and the country was thus made to carry an immense amount of stock. The Commissioner had, however, not pointed out where we had country of a similar nature where settlers could join and take similar action. As an example of the enterprise of the settlers in the Riverina country he would point out that there was a station there which had only 600 cattle when it was sold, but that it was fenced and water was put on it and 80,000 sheep, and within two years afterwards there were 140,000 sheep shorn on the station. (Hear, hear.) The Riverina settlers did not go to the Government for assistance, and he believed that if people had a proper tenure in this country we should have men on the land who were animated by a similar enterprising spirit. Another advantage the settlers in New South Wales had at that time was the presumptive right to a certain extent of country according to the value of the water improvements. A similar provision might be made here. The Wimmera country was very easy to irrigate, and the way the irrigation had been carried out had been by making a weir across the Wimmera at Glenorchy, and taking the water down an old natural watercourse. The Commissioner must have been joking in what he said about turning Cooper’s Creek into the sandhills and getting the water absorbed in that way. Then the Commissioner drew a beautiful picture of the Barossa scheme, and what would be done with irrigation there. That scheme, however, would not be supported by the House The Commissioner said there was no reason why the country from North Adelaide to Gawler should not be one continuous line of orangeries, orchards, and vineyards. Well, he had calculated that to irrigate 20,000 acres, allowing six inches per acre, would take a main carrying 30,000,000 gallons in the 24 hours, 100 days. Those 20,000 acres from North Adelaide to Gawler would make an orchard of 55 chains wide. The quantity of water mentioned was the whole quantity calculated to be carried by the mains to the Barossa works, so that no supply would be left for other works. He had taken the following information from the Victorian water scheme, in order to give some idea of irrigation there as compared with anything we could ever do here. The scheme was to irrigate from the Murray 60,000 acres during the winter months July, August, September, and October, giving a depth of 10 inches, and 19,000 acres during the five summer months from November to March, giving a depth of 15 inches. The delivery of 14,500 cubic feet of water per minute at a height of 15 feet would mean a net of 412 horse-power for pumping plant required; 9,000 cubic feet of water would be sufficient for the summer irrigation. The cost of pumping plant was calculated at £16,500, the main channels about £800 per mile, and branch channels about £200 per mile. The whole cost of the scheme would amount to £139,545, and the amount of the cost of maintenance, working expenses, and interest at 6 1/2 per cent., £18,220. The annual income would be—Winter irrigation, 10 inches deep, 60,000 acres at 4s. 6d. per acre, £13,500 ; summer do., 15 inches deep, 19,000 acres at 7s. 6d. per acre, £7,121; making a total of £20,625, and leaving an annual margin of £2,405. If we were to calculate the Barossa irrigation at the same rate as Victoria, in summer the whole of the water available for irrigation would be consumed in 50 days. Therefore there was very little chance of our doing any irrigating from the proposed reservoir at Barossa. Taking the Victorian calculation it would not water more than about 8,000 acres. The only scheme that was at all feasible as regarded irrigation was that of the Murray Flats, and after visiting the Murchison on the Goulburn River he thought (something might be done there. Of course it all depended on the expense of lifting the water from the Murray. At Murchison the water was carried to a certain level and then along open drains. It had been objected that this system of open drains would not be a success owing to the nature of the soil, but they had been found to answer the purpose well. There would always be a good supply of water from the Murray, but it would not be so great when the irrigation works were in full working order in Victoria. The greater portion of the Goulburn River, which was the main artery of the Murray, would be used in irrigation at Murchison, where a weir had been made to conduct the water for irrigating 200,000 or 300,000 acres of land. There was a great loss of water from the Murray which if it could be saved would come down and make the river navigable all the year round. This would be shown by the following extract in regard to the report of Mr. Stuart Murray“ One of the most important facts revealed by the gauging recently undertaken by officers of the Water Supply Department is that both in the case of the Murray and its tributaries a great loas of water is constantly sustained by percolation through the drifts of the river beds, and that this loss is greater in proportion when the rivers are low than when running full. The tables of gaugings recently published by Mr. Stuart Murray, of the Victorian Water Commission, show that the mean discharge of the Murray throughout the year at Echuca is 384,000 cubic feet per minute, while at Tooleybuc, some distance down, it is very considerably less, being only 242,000 cubic feet; and this notwithstanding the fact that between the two points the Campaspe and the Loddon contribute their waters—the former having a mean discharge of 14,000 cubic feet per minute and the latter 19,000 cubic feet. Indeed, the gaugings to which reference has been made show that the whole of the waters poured into the Victorian side below its junction with the Mitta Mitta are contributed only to be lost again by soakage, so that the total loss between the junction of the Mitta and Tooleybuc must be about the united discharge of these rivers, or approximately 200,000 cubic feet per minute; a supply of water which, according to the American valuation of water available for irrigation purposes, would be worth in perpetuity the enormous sum of £1,600,000,000. Outside any fancy estimates on the subject, however, it is manifest that one of the duties yet before the Water Commission and Water Supply Department is to find out by a series of exhaustive gaugings the points in the stream where this loss occurs. The possibility is that careful enquiry in this direction coupled with geological observation will lead to the discovery of a large underground flow of water, either in a compact stream, similar to some already discovered in the interior, or more diffused, but still capable of being raised on the artesian principle.” He had lived many years in the south-east, and never could understand where the water came from. He thought there could be little doubt that it came from the Murray; indeed, it was possible that the stream might be tapped in the Ninety-mile Desert. There were undoubtedly artesian springs in the south-east, and the fact of water at Lake Leake rising 300 feet above the level of the ground showed that water could be obtained in the district by artesian wells. He thought there were several defects in the Bill, but it was a good measure on the whole, and he would support it. He objected to the provision for the election of the members of the board. They were to be elected in the same way as the members of the road boards, but they were in a different position. The road boards had money from the Government to spend; but in the case of the water trusts the people borrowed the money from the Government and paid a rate of interest and gave what was equal to a mortgage over their land. Yet the Government wished to have the power to appoint new officers themselves. Any private individual would object very much to the person who lent him money insisting on putting some one in to look after his interests. Then, too, he thought there should be a sliding scale for the country districts as well as for the townships. The object was to give a permanent supply of water to the selectors who chose to make application to the Government for the loan of money, and as those in the next hundreds would borrow and the water would have to be carried from the reservoirs a sliding scale should be made. If the ordinary charge was 2s. in the pound, then it could be reduced as the person lived further from the reservoir, say to Is. in the pound. He considered that clause 118 wanted a little explanation, because in a season like this there would be no water in the reservoir, and he would like to know if the Government intended to let the trust off their 5 per cent, payment until they got water. According to the Bill the payment of interest was to begin from the time of borrowing. He had much pleasure in supporting the second reading.

On the motion of Mr. CALDWELL the debate was adjourned till Tuesday next.