

# Engineering Considerations in an Historical Argument — The Ridley-Bull "Stripper" Controversy

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**SUMMARY** For more than 140 years an argument has continued, off and on (and sometimes acrimoniously) over the invention of the South Australian wheat "stripper". Some, such as G.L. Sutton (1937)<sup>1</sup>, have claimed that the real inventor was a farmer, John Wrathall Bull (1804?-1886), and that Bull's idea was stolen and then commercially exploited by the Hindmarsh flour-miller John Ridley (1806-1887). Indeed, following Sutton, most modern Australian agricultural and general historians have accepted this view without question<sup>2</sup>, and incorporated it into their own works. Ridley and his supporters, however, always staunchly denied the charge (which was originally laid by J.W. Bull in 1845), insisting that Ridley himself was the sole and unaided inventor.

It will be shown that certain purely engineering considerations can significantly assist in settling this matter; these have not been taken into account previously. Further, these engineering factors, taken together with some additional historical evidence recently brought forward, now enable us to see that Ridley was unjustly accused, and that in fact he is fully entitled to the credit for the "stripper's" invention as well as for its introduction.

## 1 INTRODUCTORY REMARKS

During 1843 the colony of South Australia faced a serious, and also to an extent unexpected, agricultural crisis. Following on from some very rapid expansion in its infant wheat-growing industry over the preceding two years, a situation had arisen where a bumper crop was expected in the summer at year's end, but which would be far too large for the total local work-force to gather in.

In the previous harvest season (1842-43) a wheat crop of just under 14,000 acres had taxed to the limit the maximum harvest effort which the colony could then muster. Every able-bodied man was recruited, and even the Government offices were closed (by order of Governor Grey) to release as many men as possible. Indeed the Governor himself reportedly rolled up his sleeves and took his turn with the reaping hook.<sup>3</sup> Sailors from ships in the harbour deserted their vessels in order to take advantage of the high wages on offer for harvest work, and some 150 soldiers from New South Wales also joined in. These soldiers, incidentally, had been sent to help out at the request of Governor Grey, who had forseen the difficulty. Later, in a letter to a friend in England, the Governor wryly remarked concerning them:

'... at the pruning hook, in getting in that harvest, they were of vast assistance, and not often have soldiers been more nobly occupied...'<sup>4</sup> However in 1843, and with only a slight increase in the colonial population, some 23,000 acres were sown to wheat - that is, an increase of almost two-thirds over the year before. By mid-year it was plain to all that at the coming harvest the labour situation would be very serious indeed. In fact, unless something could be done quickly, a considerable part of the crop was certain to be lost, remaining in the paddocks to rot for want of harvest hands to bring it in.

## 2 RESPONSE TO THE CRISIS, AND THE INTRODUCTION OF THE "STRIPPER"

As a result of the general public unease, in August

or September of 1843 a group calling itself the "Corn Exchange Committee" came together in Adelaide. This was a loose association of prominent local men - some of them farmers - who were in the habit of meeting socially at Payne's 'Auction Mart Tavern' in the town. Their self-imposed task was to encourage those settlers possessing inventive talent to produce a mechanical "reaping machine" in time (hopefully!) to help with the harvest.<sup>5</sup> In late-September 1843 a "reaping machine" design competition was held in Adelaide, under the auspices of the Committee, but of the seventeen or so entries only one is seen in hindsight to have possessed originality and real promise.

Mr. J.W. Bull, a farmer of the Mount Barker district, submitted a model machine featuring what we would now call a "comb-and-beaters" mechanism for threshing the grain directly from the ears of the standing crop. This was examined by the Committee's judging panel on the evening of 19 September 1843, but unfortunately they saw no particular merit in it and put it aside. A dispirited Bull afterwards left the model on public display in the office of an Adelaide corn merchant, in the hope that someone with more means than his own might be interested to make up such a machine for testing.

However in the meantime John Ridley, a pioneer flour miller of Hindmarsh, had quietly been constructing a full-sized machine of his own design in the workshops attached to his mill. He was not an entrant in the Committee's competition, but he did advise the Committee's judges (on 21 September) of his activities. On that occasion he told the panel and others assembled that the construction of his machine already was well underway; they would all be welcome, he said, to watch the field trials as soon as it was ready.

As is now well documented,<sup>6</sup> John Ridley's machine had its first public demonstration, before a large crowd of onlookers, at Wayville on 14 November 1843, and this was an extraordinary success. Subsequently

it helped in bringing in that season's problem harvest, and then went on to become the dominant grain-gathering machine in South Australia for the remainder of the century. It has become known simply as the "stripper".

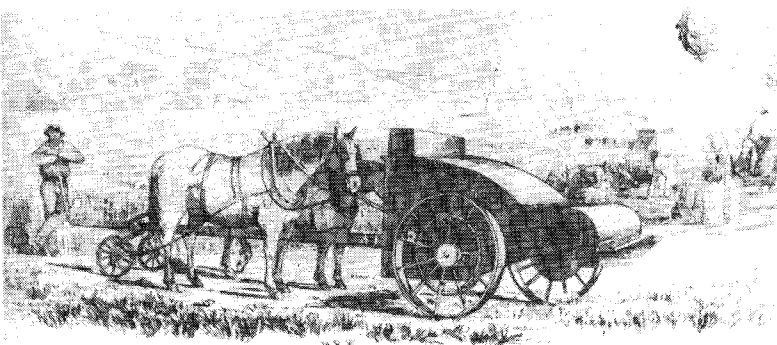


FIGURE 1 REAPING MACHINE SOUTH AUSTRALIA

Figure 1 The original Ridley machine, as sketched by 'N.R.F.'  
(From M. Collisson, South Australia in 1844-45 (1845).)

revolution in [the local] rural economy ...' which was then occurring. Thus began a controversy which, as stated at the outset, has been unpleasant and very long-running. Indeed it has continued to the present day. Over the years some have publicly supported Bull's position, and others Ridley's, with the balance of opinion in recent times (following Sutton) in favour of Bull.

As a preliminary to a reassessment of the situation, perhaps a recapitulation of the facts as they are known could be helpful. In chronological order, as far as possible, they are as follows:-

(i) By mid-1843 it was recognised that the area of wheat which had been planted in South Australia was too great for the colony's labour force to gather in at the end-of-year harvest.

(ii) During September of that year the "Corn Exchange Committee" mounted a public "reaping machine" design competition, hoping to uncover a suitable design to be made in time to help with the harvest.

(iii) Among the entries received was J.W. Bull's model, featuring the "comb-and-beaters" principle. This was shown to the judging panel on 19 September, and afterwards was placed on public display in Adelaide.

(iv) On 20 September 1843 John Ridley met the Committee, and announced that already he was well advanced with the construction of a machine of his own.

(v) Newspaper reports<sup>9</sup> indicate that Ridley's machine was completed, and also tested privately near Hindmarsh, by not later than the last week of October in 1843.

(vi) During these private test sessions difficulty was experienced with the (wooden) comb; it warped, and as well the tooth-shape was found to be unsuitable. Two of Ridley's workmen (John Dunn and John Dawkins) then devised and fitted a new (iron) comb, which cured the trouble.<sup>10</sup>

(vii) On 3 November 1843 Samuel Marshall (a "mechanic" of Adelaide) became the first in the colony to complete and actually test a harvest machine. This was a "cutting style" machine; unfortunately it proved a failure.

(viii) On 14 November 1843 John Ridley publicly demonstrated his machine at Wayville, near Adelaide, and it performed both impressively and flawlessly.<sup>11</sup> (Note, however, that it operated on the "comb-and-beaters" principle, which was featured in Bull's model displayed some eight weeks previously.)

(ix) This machine, together with a second on the same pattern hurriedly constructed by Ridley at Hindmarsh, made an important contribution at the 1843-44 harvest. Subsequently Ridley was widely congratulated, while there was no protest from anyone (including Bull) as Ridley received the credit for the machine's invention as well as for its successful introduction.

(x) On 15 March 1845 (and after a total silence of sixteen months) J.W. Bull, in a letter to the Adelaide press,<sup>12</sup> laid claim to the invention of the "stripper's" principle of operation and, through that, to the credit for having initiated an agric-

### 3 CONTROVERSY OVER PRIORITY OF INVENTION: THE FACTS OF THE MATTER

For a time Ridley enjoyed undisputed public recognition as the inventor of the "stripper", and he received congratulations from all sides. He was awarded a prize by the South Australian Agricultural and Horticultural Society, received high praise from the Governor and other officials, was presented with a sum of money raised by public subscription,<sup>7</sup> and was even the recipient of a congratulatory citation from Queen Victoria and Prince Albert. For more than sixteen months after the Wayville event there was no suggestion anywhere of the credit belonging to anyone but John Ridley - notwithstanding the fact that the "stripper's" principle was markedly similar (if not identical) to that in the model displayed previously by J.W. Bull.

Finally, however, in a letter to the Adelaide press published on 15 March 1845,<sup>8</sup> Bull unequivocally claimed the "comb-and-beaters" principle as his own, and through that also the major credit for the '...



John Ridley (1806-1887)



J.W. Bull (1804?-1886)

ultural revolution. Ridley ignored the letter totally.

(xi) Irritated by the lack of a response, Bull published a further letter on 5 April 1845.<sup>13</sup> In this he challenged Ridley directly either to confirm or deny his (Bull's) right to the invention. Ridley ignored this letter as well, and thereafter nothing more was heard from Bull for thirty years.

(xii) Early in 1853 Ridley returned to England to live in retirement. Prior to his departure from South Australia several official functions were arranged to mark his invention of the "stripper" and his other contributions to the colony's progress. Nothing was said by Bull or by any of his supporters.

(xiii) On 27 February 1861, at a function in London arranged by a group of former South Australian colonists, Ridley was presented with a handsome silver candelabrum as an expression of thanks for the creation of the "stripper".<sup>14</sup> Again there was no following protest, either in Britain or South Australia.

(xiv) In December 1875, after a thirty years silence, J.W. Bull wrote to the press reasserting his claim to the "stripping" principle.<sup>15</sup> He did so, he said, in the interests of leaving '... a legacy of honour ...' to his children and grandchildren. A spate of press correspondence followed, with strong support offered to both sides.

(xv) Late in February 1876 Bull published two further letters,<sup>16</sup> this time hinting more strongly than before that Ridley had dishonestly appropriated his "comb-and-beaters" principle.

(xvi) During 1880 Bull persuaded three reputable Adelaide men<sup>17</sup> to review his collected evidence and make a judgement upon it. Their findings favoured Bull (but can now be seen to be illogically based).

(xvii) In June of 1880 Bull formally petitioned the South Australian Government for recognition of himself as the true inventor of the "stripper", and also for an appropriate reward.

(xviii) In September 1882 the Parliament voted a limited acceptance of Bull's claim, and awarded him £250 '... for services in improving agricultural machinery ...' However Ridley remained the Parliament's choice as the actual inventor of the South Australian "stripper".<sup>18</sup>

(xix) In January 1886, following yet another published letter from Bull and further press debate, John Ridley broke a silence of more than forty years and wrote to the Adelaide press himself.<sup>19</sup> In this letter he stated categorically that, apart from a '... notice of a Roman invention ...' in an old encyclopaedia,<sup>20</sup> '... from no other source whatever did I receive the least help or suggestion ...'

(xx) After further letters in the press from Bull and others (which generally were inconclusive), on 4 June 1886 Bull wrote to the press for the last time.<sup>21</sup> (He was now very ill and dying.). However this time Bull made a quite new allegation - viz., that in 1843 Ridley initially began the construction of a "cutting style" machine, but upon seeing Bull's model at once consigned it to the '... waste heap ...' After that, Bull said, Ridley commenced a new machine based on the "comb-and-beaters" principle (i.e., the Wayville machine).

(xxi) J.W. Bull died in September 1886, and Ridley also in November 1887. A biography of Ridley written by his daughter Annie (and not unexpectedly

favouring his side of the dispute) was published some years later, in 1904.<sup>22</sup>

(xxii) In September 1937 Dr. G.L. Sutton published an influential article reviewing the controversy.<sup>23</sup> His principal conclusion was that J.W. Bull was the rightful claimant to the invention of the "stripper" and that Ridley dishonestly deprived him of the credit for it.

(xxiii) Subsequently virtually all prominent Australian agricultural and general historians have (somewhat uncritically) accepted this view, and reproduced it in their own works.

#### 4 ENGINEERING CONSIDERATIONS - WHAT DO THEY INDICATE TO US?

As is noted briefly above (item (xx)), at the end of his life J.W. Bull asserted that at first Ridley set out to make a "cutting style" machine, but abandoned it when he saw Bull's model soon after 19 September 1843. After that, said Bull, Ridley sent for Samuel Marshall to build a new machine based on a quite different principle - the same, in fact, as that embodied in the model. Bull then went on to claim that John Wilkinson, one of Ridley's "engineers" at Hindmarsh at the time, had later verified the scrapping of that first design by Ridley.

Of course the truth or falsity of this accusation by Bull is central to the whole dispute. If it is true, then Ridley was not the inventor of the "stripper". If it is false, then the question remains an open one, but perhaps with a slight bias in Ridley's favour.

As far as is known there exists no written record by or on behalf of John Wilkinson to show that such an earlier "cutting" machine ever existed, let alone that it was scrapped to make way for a new approach. Neither is there anything concerning such a machine from John Dunn or indeed from any of Ridley's workmen - all of whom were (with Wilkinson) directly involved, and were thus in a position to know. Indeed at least three positive statements to the contrary were afterwards published by John Dunn; we shall consider these more closely a little later.

But first let us scrutinise carefully the known facts, and consider some of the engineering implications. From the newspaper reports we know that John Ridley's ultimately successful machine was finished, and also privately tested, by the last week of October 1843. We know in addition that a replacement comb was made and fitted, and the machine then retested, between that time and the public demonstration at Wayville on 14 November. Thus, if we are to accept Bull's claim that Ridley began making this machine (abandoning an earlier one) after he saw the model around 19 September, then we must also accept that the total construction time for the Wayville machine must have been not more than six weeks at the very most.

We also know that, following the Wayville triumph, Ridley at once set in train the construction of a second machine. There is evidence to show that this was finished by 12 January 1844.<sup>24</sup> In this new construction program, according to John Dunn (who was Ridley's foreman at Hindmarsh at the time) '... all hands who could use a tool were set to work to build No.2 ...'<sup>25</sup> Thus we see that, with an enhanced work-force employed, machine No.2 required exactly eight-and-a-half weeks for its construction alone - that is, at least two-and-a-half weeks more than for machine No.1 (if we accept Bull's scenario).

On purely technical grounds we can say that such a state of affairs seems more than a little unlikely. All engineers know that the number of man-hours required to produce a prototype almost always is significantly greater than for any subsequent copies - not less. The rate at which unfamiliar components can be made and assembled (at the prototype stage) of course is slower than for known components in a previously proven arrangement. Unexpected difficulties encountered with the very first unit usually can be avoided in subsequent ones, and manufacturing and assembly procedures can also be streamlined to save time and effort.

Thus it would seem that the building of Ridley's Wayville machine must have been begun well before Bull's model was made public. Indeed it must have been begun not later than the beginning of September, and possibly (probably?) much earlier. From this it follows that Ridley almost certainly told the truth when he stated to the "Corn Exchange Committee" on 20 September 1843 that the construction of his own machine already had reached quite an advanced stage.

#### 5 PREVIOUSLY UNCONSIDERED TESTIMONY FROM JOHN DUNN

Curiously, all of those who previously have concerned themselves seriously with the Ridley-Bull controversy (such as J.W. Bull himself, Miss Annie Ridley, Dr. G.L. Sutton, and perhaps also Stephen Parsons and G.H. Pitt<sup>26</sup>) appear to have overlooked a body of very important evidence, which nevertheless is and always has been readily accessible. This is contained in a series of articles and letters published by John Dunn during 1886 and 1887, embodying his recollections of early South Australia. As has been mentioned already, Dunn was Ridley's foreman at Hindmarsh over the entire period of the "stripper's" conception, construction, and introduction.

For much of his life Dunn lived in the Mount Barker district, in the hills to the east of Adelaide. It is not altogether surprising, therefore, that he chose to publish these writings in his local newspaper, the Mount Barker Courier. It appears, however, that this was an historical source never examined by the investigators mentioned.

Dunn in fact had much to say about the "stripper", and also about Ridley and Bull - with both of whom, incidentally, he seems to have been on very good terms. In all instances Dunn was adamant that Ridley did not steal Bull's "comb-and-beaters" idea, and that Bull was totally wrong to accuse Ridley of it as he did. For example, in a long letter by Dunn published in mid-1886<sup>27</sup> there are no less than three direct statements on this matter. They are as follows:-

'... the idea of the Ridley reaper was obtained by the person from whom it took its name, from a sketch in an old book ...'  
(By the way, the book in question was J.C. Loudon's Encyclopedia of Agriculture, and the sketch was of the ancient Roman "vallus").<sup>28</sup>

'... Visitors came every hour of the day during this time [from mid-November 1843 to mid-January 1844, while machine No.2 was under construction], and I never heard a word directly or indirectly that anybody except Ridley was the first inventor ...'

'... I was often in town then. Mr. Bull had started a restaurant, where I often called ... for the sake of a chat ... It was at these meetings, and during these talks, that

Mr. Bull would try to impress on my mind that it was he who invented the machine ... I used to tell him then, as I do now, that I had no reason to doubt that Mr. Ridley was the first to conceive the idea of striking the head off the grain ...'

Elsewhere in the same letter Dunn also commented directly on the source of the principle employed by Ridley in the original "stripper":

'... It was sometime in the early part of 1843, I think, that Mr. Ridley conceived the idea of striking the heads instead of cutting them off, and explained his original notions to me and others in the workshops ...'

From this it is plain why Dunn refused to agree with Bull during those talks in the latter's restaurant. He could not agree because he possessed first-hand knowledge of the true situation - viz., that Ridley had himself invented the "stripping" principle, quite independently, and long before Bull made the same idea public through the display of his model.

#### 6 SOME QUESTIONS AND ANSWERS

Inevitably, in a restricted article such as this, much detail and nuance pertaining to the events and to the participants must be omitted. For instance, a discussion of the backgrounds and characteristics of the protagonists certainly would be illuminating, as would also some of the testimony offered by others having some kind of connection with the central events.<sup>29</sup> Nevertheless the foregoing already has suggested some points to consider, and this might help us to arrive at appropriate conclusions. For instance:

- 1 Was Ridley fully committed to the "comb-and-beaters" principle when he began building his first machine? Or did he, as charged by Bull, begin with a "cutting" approach and change his mind later?

Dr. G.L. Sutton (ref. item (xxii) earlier) was of the opinion that Ridley did change to a "comb-and-beaters" design after scrapping a partly-completed "cutting style" machine. His supporting evidence and argument, however, is quite unsatisfactory; they simply do not support such a conclusion. In addition, it seems most unlikely that the existence of an earlier "cutting" machine would have been deliberately suppressed by men of otherwise good reputation, such as John Dunn, John Wilkinson, and John Dawkins. (All three, of course, were at Hindmarsh throughout Ridley's project.). Indeed the total absence of references to this alleged earlier machine (other than by Bull himself) suggests that it was never more than a figment of Bull's imagination.

- 2 Was there sufficient time for Ridley to build the Wayville machine after viewing Bull's model? Or alternatively, could he have converted a part-finished "cutting" machine to the new principle?

As has already been demonstrated, the answer to the first question is 'No'. However it probably was possible for a conversion to have been carried out in the eight weeks between 19 September and 14 November 1843. All we can say about this is that so far there is no acceptable evidence to show that it was done, and indeed there is strong evidence to the contrary. In short, a "cutting" machine could have been so modified, but on the evidence it almost certainly was not!

- 3 Did Bull in any way establish the practicability of his proposed new harvesting method?

Clearly he did not. In fact Bull never attempted to move beyond the first model stage. Also, as he told the panel, Bull never envisaged such a machine doing more than just roughly harvesting the grain. But as professional engineers know, it is not possible simply to scale up a model (even a working model, as in Bull's case) to full size and obtain a practical machine. John Dunn was aware of it, though, as he indicated when he wrote in 1886:

'... Many pictures look well on paper, and models also which stand upon a table and are turned by the finger, which are useless in practice ...'<sup>30</sup>

- 4 Is prior publication of the bare principle sufficient in itself to establish Bull's right to the invention of the "stripper"?

Certainly Bull was the first (by about eight weeks) to "announce" the "comb-and-beaters" principle- via his model. However entirely independent invention by separate individuals in fact has been reasonably common over the centuries, both in science and technology. (Cf. for instance Newton-Liebniz and the integral calculus, or again Richard Trevithick-Oliver Evans and the so-called "Cornish" steam boiler.). In such circumstances it seems unrealistic to nominate one over the other as the inventor; instead it is preferable to speak of co-inventors or joint inventors. It would hardly be right, therefore, to regard the appearance of Bull's model as the deciding factor in this priority dispute.

- 5 If, as he claimed, Ridley devised his machine independently of outside influences, where are his developmental sketches and/or his working drawings?

It is a fact that no sketches, drawings, or even rough notes of John Ridley's indicating the line of development of his ideas for a "stripper" have ever been found. However this too was adequately accounted for by John Dunn in 1886, when he wrote:

'... He [Ridley] was a very poor draftsman. His drawing-board was his shop-door, and his pencil a piece of chalk ...'<sup>31</sup>

That is, Ridley saw no particular need to prepare formal drawings, or to preserve any original rough sketches. He used simple chalked diagrams on a wall or door to convey the broad outline to the workmen. After that it was up to John Dunn and his colleagues in the workshop to translate these (supplemented no doubt by verbal instructions from time to time) into suitable components.

#### 7 CONCLUSIONS: RESOLUTION OF THE CONTROVERSY

Taken together, the engineering considerations (i.e., those relating to possible/probable times required for construction), and the unequivocal testimony of Ridley's foreman, John Dunn, establish fairly clearly that John Ridley did not purloin J.W. Bull's discovery. Neither, it appears, did Ridley abandon a partly-finished "cutting" machine when Bull's model was made public in late-September 1843. Indeed it has never been satisfactorily shown that Ridley at any time attempted to make a machine of that type.

Ridley in fact had no need to steal Bull's idea, since he himself had accomplished the self-same inventive feat - quite independently, and long before the appearance of the model. Bull's strenuous and prolonged efforts to prove that he had been robbed of his invention were therefore doomed to failure from the beginning. The accusation

against Ridley was untrue, and thus could never be proved.

That being so, the sole legitimate ground for J.W. Bull's claim to the invention was his priority (which is unquestioned) in actually announcing the "comb-and-beaters" principle to the public. After displaying his model, Bull then made no contribution whatever towards the production of a working "stripper", or for that matter to its development or improvement afterwards. (As a consequence of the latter, the South Australian Parliament's award to Bull in 1882 for '... services in improving agricultural machinery ...' is seen to have been entirely inappropriate. Bull at no time made any contribution of that kind.). The fact is that, had Bull delayed showing his model by only a few weeks, his name probably would never have arisen subsequently in connection with the machine at all.

Ridley on the other hand went far beyond the mere conception of a novel harvesting principle. He also constructed and introduced a working machine, proved its efficiency in the field, and (though this has not been discussed) he afterwards led the way in the commercial manufacture of machines for the local wheat industry.

It is now clear that Bull and Ridley, contemporaneously and independently, each invented the "stripping" principle. But if (as seems fair) we count them as joint inventors in this sense, it must be understood that only the principle is at issue. The credit for producing a practical working machine belongs solely and completely to Ridley. His contribution overall is thus seen to have been far greater than that of J.W. Bull - if indeed Bull's activities really influenced the outcome at all. It is appropriate, therefore, that this unique and important machine is now commonly known as the "Ridley stripper".

#### 8 NOTES

- (1) See G.L. Sutton, 'The invention of the stripper', Journ. Dep't Agric. of Western Australia, 2nd series, Vol.14, No.3 (Sept. 1937), pp.193-247.
- (2) Examples are the agricultural historians A.R. Callaghan and A.J. Millington, E. Dunsdorfs, and F.L. Wheelhouse, and the eminent general historian C. Manning H. Clark.
- (3) See Annie E. Ridley, A Backward Glance (1904), p.93.
- (4) J. Milne, Romance of a Pro-Consul (1899), p.64
- (5) By this time reasonably successful(?) machines had been developed both in Britain and America. However none were yet being manufactured and sold commercially.
- (6) G.L. Sutton (note 1); also L.J. Jones, 'John Ridley and the South Australian "Stripper"', History of Technology, Vol.5 (1980), pp.55-101, and elsewhere.
- (7) Afterwards, however, Ridley returned the gift by buying books for a fledgling local public library.
- (8) Adelaide Observer (15 March 1845), p.7.
- (9) Adelaide Observer (28 October 1843), p.5, and (4 November 1843), p.5; also South Australian Register (1 November 1843), p.2, and Southern

- Australian (7 November 1843), p.2.
- (10) See John Dunn's letter in the Mount Barker Courier (11 June 1886), pp.2-3, and also (with slight changes) in the South Australian Register (19 June 1886), p.7.
- (11) Ref. note 6.
- (12) Ref. note 8.
- (13) Adelaide Observer (5 April 1845), p.5.
- (14) See L.J. Jones, 'John Ridley's candelabrum', The Connoisseur, Vol.209, No.840 (February 1982), pp.146-7.
- (15) South Australian Register (27 December 1875), p.6.
- (16) South Australian Register (23 February 1876), p.6, and (29 February 1876), p.6.
- (17) These were Messrs. T.F. Monteith (the then Mayor of Glenelg), H. Evans (a partner in a firm of land and commission agents), and J. Harvey (a farmer and Member of Parliament).
- (18) See South Australian Parliamentary Debates (5 September 1882), col.844.
- (19) His letter was published in the South Australian Register (6 May 1886), p.7, and again in the Adelaide Observer (8 May 1886), p.11.
- (20) This was J.C. Loudon's Encyclopedia of Agriculture.
- (21) South Australian Register (4 June 1886), p.3.
- (22) See note 3.
- (23) See note 1.
- (24) In the Adelaide Observer (13 January 1844), p.5, it was reported that '... machine No.2 was turned out of hand yesterday ...'
- (25) South Australian Register (19 June 1886), p.7.
- (26) Mr. Parsons was an enthusiastic amateur historian in South Australia around the 1920s, and Mr. Pitt for many years was the Chief Archivist at the State Library in Adelaide.
- (27) Ref. note 10.
- (28) For further information on the "vallus", see L.J. Jones, 'The early history of mechanical harvesting', History of Technology, Vol.4 (1979), especially pp.107-112.
- (29) For full details, see my Ph.D. thesis, John Ridley and the Early Progress of South Australia, University of Melbourne, 1979.
- (30) Mount Barker Courier (11 June 1886), pp.2-3.
- (31) Ibid.

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