

10.3.07

The Student.



Roseworthy
Agricultural
College.

Vol. VII., No. 1.

JULY, 1907.

PRESENT STUDENTS.



THIRD YEAR.

| | |
|--------------------|-----------------|
| F. K. Watson | J. C. Buttfield |
| S. C. Billinghurst | A. A. Magarey |
| J. A. Horrocks | O. J. Howard |
| W. C. Kühne | J. K. Gardiner |
| E. J. Clarke | M. Dunlop |
| R. G. Williams | K. S. Wilcox |

SECOND YEAR.

| | |
|-----------------|------------------|
| E. O. Brown | J. R. Hocking |
| G. M. Buchanan | F. J. Kühne |
| D. A. Byard | E. L. Orchard |
| W. A. Carter | P. A. Reynolds |
| C. W. Cooke | P. S. Richardson |
| L. S. Davie | A. C. Sandland |
| W. J. Goldsmith | T. W. Sobels |
| S. E. Hall | E. M. Judell |

FIRST YEAR.

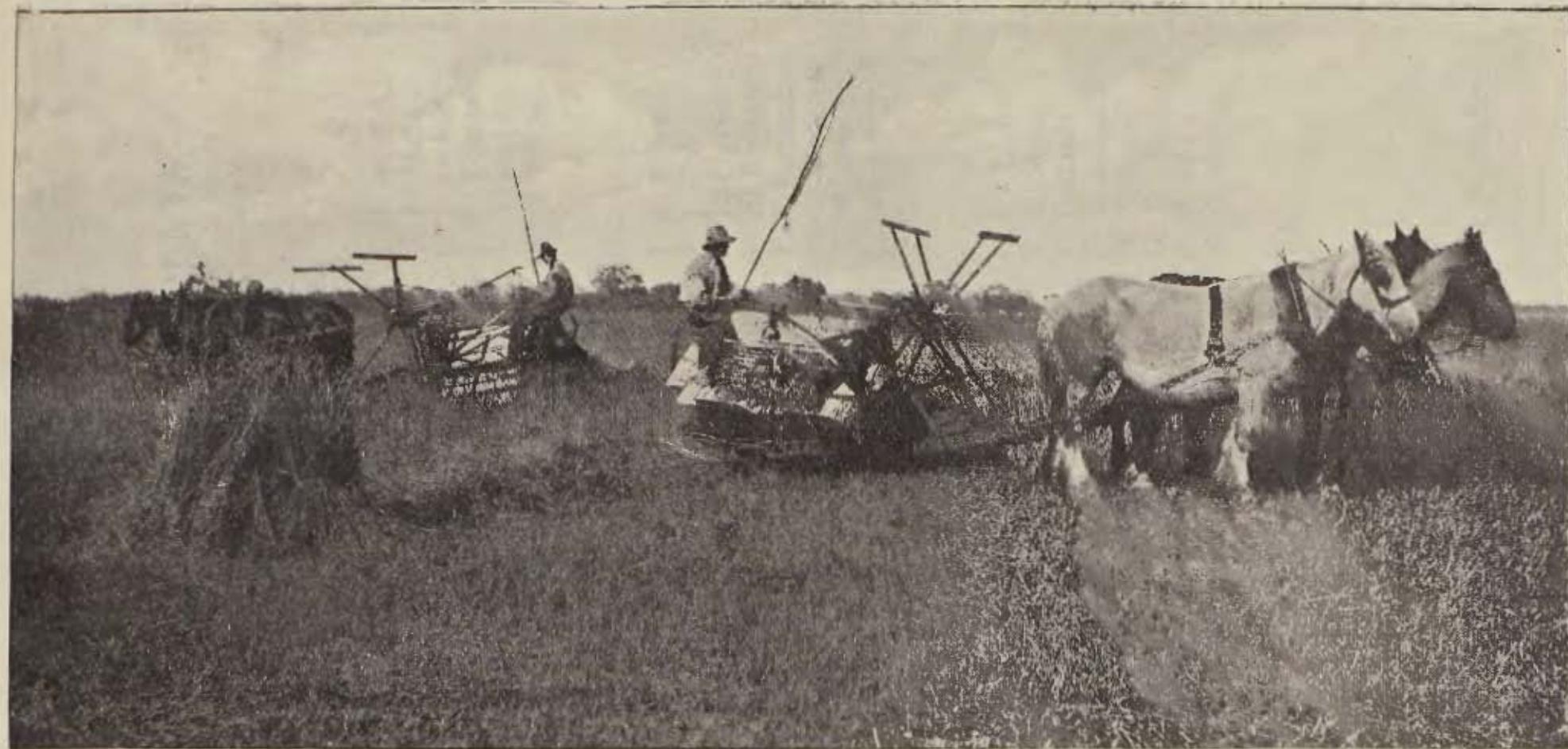
| | |
|-----------------|----------------|
| G. M. Buchanan | G. W. Linnet |
| L. J. Cook | T. R. Moten |
| H. W. S. Cherry | P. Rumball |
| H. Clutterbuck | F. R. Sangster |
| E. D. Connor | H. Stephen |
| J. Fowler | D. M. Watson |
| A. S. Hall | G. E. Wells |
| F. W. Knabe | M. O. Weste |

SPECIAL FARM WORK.

S. A. Brown.

SPECIAL DAIRY.

W. Fairweather C. J. Ware N. Walter.



CUTTING THE HAY CROP AT R.A.C.

The Student.

Published under the joint direction of the Present Students and the Old Collegians' Association.

*J. WALLACE SANDFORD, P.C.S., Editor for O.C. Association.
J. A. HORROCKS, Editor for Present Students.*

VOL. VII.—No. 1.

JULY, 1907.

EDITORIAL.

THIS year the College Magazine has reached its seventh volume. Our new year has started with fewer students than were on the roll last year, so that the accommodation of the College has again reached normal conditions.

SEEDING.

The season opened very favourably, although at one period it was feared that a portion of the area would have to be resown through malting. Fears were, however, set at rest by the arrival of good rains. The crops are all looking well, of which details will be found further on.

DAIRY.

The dairy herd since our last issue has suffered severe loss in the death of two cows. The special course is now occupying the attention of four students, which is the largest number that have as yet undertaken the special course at one time. The milk yield has fallen off considerably owing to the poor feed supplied to the cows.

FENCING.

The paddock known as "Dahlitz" has had its fences renewed, and will now carry sheep without the aid of a shepherd. Several of the plots in No. 4 have been fenced off with a view to testing the after effect of superphosphate on stubble land.

FOOTBALL.

This season's team ranks itself as one of the best the College has put in the field. Under the able leadership of F. T. Cooper, they managed to run into second place at the end of the first round of the Gawler Association. The average weight being 11 stone 8 lbs., which is considered to be a solid block to bump up against.

CRICKET.

Last year's cricket team covered themselves with honor by coming premiers of the Gawler Association. They scored the highest and lowest scores of the season, viz., 464 against the Lyrics, and 52 against the Gawler Cricket Club.

SCHOLARSHIPS.

The Annual Scholarships have been awarded to the following:—T. R. Moten, H. H. Stephen, P. Rumball, G. W. Linnett, L. J. Cook.

Egg-laying Competition, 1907-8.

By W. R. Day.

In regard to the Egg-laying Competitions held in the past in South Australia, it is interesting to note the various changes and results which have taken place in connection with the first three, and the great improvement in the work done by competitors in improving the laying strains of their stock, which, in some cases, have made rapid strides.

The first competition, which was held at Magill during 1903-4, concluded with what was then considered a good average in number of eggs laid, viz., 132 per hen, by a variety of breeds, some of which are not even considered now by the breeder who is after eggs. The second competition, which was held at Roseworthy during 1904-5, merely showed that some of the birds were layers and others were not; and although the result (av. 117 per hen) did not prove of very great interest to breeders at that time, I am inclined to think it was of the greatest benefit to the industry that could have come along, as it proved once and for all that if eggs were to be obtained in anything like satisfactory numbers, a great change would have to be brought about in the breeding of laying stock, and by the aid of the press, and the brains and the money of competitors. A vast improvement was noticeable in the results of the third competition, which was also conducted on the College grounds during 1905-6, and showed an average of 171 eggs per hen; grand total, 31,962, from 31 pens, each containing six hens; and the total market value of eggs, £98 10s. 11d., which was obtained on an average price for the year of 8½d., was sufficient to pay for all feed and leave a balance in hand of £52 3s. 4d. The year 1906-7 proved to be one of rest for the South Australian fowls, as it was decided by the persons mostly interested in the movement that a break would give breeders a chance to rear their stock at the right time to enable them to start afresh on even terms with the competitions in the other States on

the 1st April, and the fourth competition was duly started on that date of this year, the pens, numbering 75, were erected on a portion of the paddock known to all students of the Roseworthy College as No. 9. The locality of the pens is quite different from that of the two previous competitions, which were held in the carob plantation, thereby obtaining both shade and shelter ; the present one being held right out in the open does away with any points of advantage to be gained by any one pen over another in regard to shade or shelter. As all the pens are constructed alike, the birds all started on equal conditions. The yards, or pens, are each 40 ft. x 10 ft., with an iron house 6 ft. x 4 ft. x 5 ft. attached on the end of the run, and thus standing in the passage-way, which seems to be an advantage over the usual plan of erecting the house in the middle of the yard. The breeds which occupy the pens are as follows :—White Leghorns, 34 pens; Brown Leghorns, 4; Black Leghorns, 3; Buff Leghorns, 1; Black Orpingtons, 17; Buff Orpingtons, 2; Silver Wyandottes, 9; White Wyandottes, 3; Golden Wyandottes, 2. Thus it will be seen that the breeds of Leghorns occupy no fewer than 42 pens, Black Orpingtons next with 17. One can hardly believe that Leghorns, Orpingtons, and Wyandottes constitute or represent the laying strain of fowls. What has become of the Minorca, Andalusian, Black Spanish and others ? Surely they are not entirely a breed of the past. Although this competition is as yet in its infancy, there seems to be a good deal of interest taken in it by the general public, as a good many have already paid visits of inspection.

The feeding arrangements are such as may easily be carried out by any one desirous of keeping poultry. Only the plainest of food is being used, but of the best market quality, as it has been proved beyond doubt that to feed with cheap rubbish, so-called fowls' corn, is the most expensive in the end. The bill-of-fare in use here is as follows—7 a.m., bran and pollard mixed with hot soup, from 18 to 24 ozs., according to appetite ; 12 o'clock, chaffed green feed and crushed bone, about $1\frac{1}{2}$ ozs. per bird ; 4 p.m., grain, chiefly wheat, which will be replaced by maize, peas or oats as the cold weather sets in. The market prices of the above foods are rather high at present, and thus causes the cost of keep to be a fraction over one penny (1d.) per head per week ; but with the present price of eggs, the result so far has been of a very profitable nature.

The following weekly records to date may be of interest to some of the readers of the *Student* :—

| | | | |
|---------------------|-----|-----|-------|
| Week ending April 7 | ... | ... | 405 |
| " 41 | ... | ... | 588 |
| " 21 | ... | ... | 924 |
| " 28 | ... | ... | 1·067 |

| | | | | |
|-----------------|----|-----|-----|--------|
| Week ending May | 5 | ... | ... | 1·089 |
| " | 12 | ... | ... | 1·161 |
| " | 19 | ... | ... | 1·270 |
| " | 26 | ... | ... | 1·377 |
| June | 2 | ... | ... | 1·269 |
| " | 9 | ... | ... | 1·243 |
| " | 16 | ... | ... | 1·270 |
| " | 23 | ... | ... | 1·480 |
| " | 30 | ... | ... | 1·581 |
| | | | | 14·724 |

Average per pen—April, 43·8 ; May, 73·3 ; June, 79·16.

Apart from the competition pens, the College possesses an up-to-date poultry plant of recent construction, comprising 28 pens of good stock, such as Indian Game, Faverolles, Silver Wyandottes, White Leghorns, Buff Orpingtons (for crossing for table fowls), and black orpingtons ; also a fine lot of Bronze-winged turkeys, and Pekin ducks (total about 900). Young stock from the above always obtainable by students at reasonable cost.

A new incubator-house has just been completed, measuring 25 ft. x 15 ft., in which we intend shortly to have six or eight incubators in work, and thereby hope to be able to supply for use at the College about 1,000 head of poultry per year. We now need a brooder-house in which to rear the chicks as they come from the incubators ; and I have reason for believing we will get that house in the near future. Then the College will have a poultry station which will be very complete, and should be a source of instruction and an object lesson of great interest to all students of the R.A.C.

Seeding Operations, 1907.

By A.E.

INTENDING to start seeding operations early this year, everything was got in readiness by the beginning of April. On April 5th and 6th rain fell to extent of 170 points, which gave us almost ideal conditions for seeding, and we lost no time in availing ourselves of the opportunity to get such a good start.

As soon as the soil would admit of it, the cultivators, drills, harrows, &c., were set going, which was on April 9th, and they had very little rest from then till the seeding was finished.

Very little broadcasting was done this year, in fact, the field known as Dahlitz was the only one in which the broadcaster was used at all.

The order in which the fields were seeded was—

| | |
|----------------------|-------------------------|
| Pig Paddock A ... | Ensilage crop |
| Dahlitz ... | Sheep feed |
| No. 6 B ... | Varieties (small plots) |
| No. 1 ... | Hay |
| No. 6 A ... | Feed |
| No. 5 B ... | Varieties (large plots) |
| No. 6 D (small part) | Varieties (small plots) |
| Ebsary's B ... | Hay and oats |
| No. 6 D ... | Varieties (small plots) |
| Ebsary's A ... | Cape Barley |
| No. 6 C ... | Cape Barley |
| Remainder No. 6 D | Wheat |
| Ebsary's C ... | King's Early Wheat |
| Odd end No. 4 ... | Gluyas Wheat |

Details of the seeding of these fields following.

Pig Paddock A.—Ensilage Crop.

Sown April 10th. Consisting of special mixture—50 lbs. Calcutta Oats, 70 lbs., 10 lbs. Drilled in with 1½ cwt. superphosphate to the acre. Area, 5 acres.

Dahlitz.—Sheep Feed.

Sown April 11th to 16th. Consisting of mixture—60 lbs. barley, 6 lbs rape, little mustard. This field carried a wheat crop last year; the stubble was cultivated up with a disc cultivator and then rolled. The mixture of seed was broadcasted on and harrowed in. Area 43 acres.

No. 6 B.—Varieties (Small Plots).

Sown April 11th to 22nd. Varieties consist of Beloglino wheat, 1½ acres; Padui wheat, 1 row; Kharkoo wheat, 3 rows; Cape wheat, 4 acres; Tzar wheat, 1 acre; Red Egyptian wheat, 1½ acres; Banner oats, ¾ acre; Russian No. I. (unnamed wheat), ¾ acre; Albert barley, 1 acre; Tzaritsa wheat, ½ acre; Russian No II. (unnamed wheat), 3 rows; Russian No. III. (unnamed wheat), ½ acre; Biddee wheat, 1 acre; Msakuy wheat, 2½ acres; Ahjecl and Hmeera wheats mixed, 2½ acres; Mahmoudi wheat, 1½ acres; Adjini wheat, 1½ acres; Bearded Rieti wheat, 2½ acres. Drilled in at rate of 72 lbs. seed, with 2 cwts. superphosphate.

No. 1.—Hay Crop.

Sown April 15th to 18th. Drilled in 70 lbs. King's Early wheat with 3 cwts. superphosphate to the acre. Cross drilled this with 50 lbs. Calcutta oats and 3 cwts. superphosphate to the acre.

This field has been in pasture for some years now, and the 6 cwts. superphosphate applied to this crop is principally for the benefit of future pastures. Area, 12 acres.

No. 6 A.—Sheepfeed.

Sown April 18th to 24th.

- 1 lb. Thousand-Headed Kale seed, drilled in with $\frac{1}{2}$ cwt. bonedust to the acre ; area, $28\frac{1}{2}$ acres.
 1 lb. Turnip seed, drilled in with $\frac{1}{2}$ cwt. bonedust to the acre ; area, 3 acres.
 1 lb. Swede seed, drilled in with $\frac{1}{2}$ cwt. bonedust to the acre ; area, $3\frac{1}{2}$ acres.

Area of field, 35 acres.

No. 5 B.—Wheat Varieties (Large plots).

Sown April 23rd to May 4th.

| | | |
|----------------------|-----------------------|----------------------|
| Petanielle Blanche | 66 lbs. seed per acre | $9\frac{1}{2}$ acres |
| Belotourka | 80 " | " $9\frac{1}{2}$ " |
| Jonathan | 70 " | " 20 " |
| Federation | 70 " | " $16\frac{1}{2}$ " |
| Carmichael's Eclipse | 70 " | " 5 " |
| Yandillah King | 66 " | " $3\frac{1}{2}$ " |
| Comeback, No. 6 | 70 " | " 2 " |
| Fan (selected) | 70 " | " $3\frac{1}{2}$ " |
| Glyyas (selected) | 70 " | " 6 " |

Drilled in with 240 lbs. superphosphate to the acre. Headlands, King's Early wheat.

No. 6 D (Small Part)—Varieties (Small plots).

Sown April 22nd and 23rd. Red Fife, $\frac{3}{4}$ acre ; Black Petanielle of Nice, 4 rows ; Beardless Odessa, 1 acre ; Spanish Bearded Red, 1 acre.

Drilled in with 2 cwts. superphosphate to the acre, and at rate of 72 lbs. seed per acre.

Ebsary's B.—Hay Crop and Oats.

Sown April 25th to May 6th. 51 acres. Hay crop consisting of—

| | | |
|-----------|--------------------|------------------|
| 9 acres. | Belatourka | 70 lbs. per acre |
| | Calcutta Oats | 50 lbs. " |
| | Vetches | 10 lbs. " |
| 42 acres. | King's Early Wheat | 70 lbs. " |
| | Calcutta Oats | 50 lbs. " |
| | Vetches | 10 lbs. " |

Sown May 6th to 9th.

| | | |
|---------------|-----------------------|----------------------|
| Liggowo Oats | 80 lbs. seed per acre | $5\frac{1}{2}$ acres |
| Calcutta Oats | 80 lbs. " | $14\frac{1}{2}$ " |

Whole field drilled in with 240 lbs. superphosphate to the acre.

No. 6 D (Part). - Varieties (Small Plots).

Sown May 7th to 9th. Square Headed barley (selected) 40 lbs. seed, 7 acres ; Fan wheat (selected), 12 rows (short) ; Farrer's unnamed wheat, $1\frac{1}{2}$ acre ; Indian Runner wheat, 2 rows ; Alpha

wheat, 5 rows; Farrer's No. 25 wheat, 3 rows; Carmichael's Eclipse wheat, 4 rows; Farrer's No. 10 wheat, 2 acres; John Brown wheat, 2½ acres; Purple Straw wheat (selected), 4 rows; Aronautka wheat, 1 row; Combination wheat, 1 acre; a College selection wheat, 8 rows; King's Early wheat (selected), 4 rows; King's Early White (selected) wheat, ½ acre; Gluyas (selected) wheat, ½ acre; King's Early Red (selected) wheat, 1½ acres; Gluyas wheat, ¼ acre.

Wheats at rate of 72 lbs. per acre. Drilled in with 2 cwts. superphosphate to the acre.

Ebsary's A.—Barley.

Sown May 10th to 18th. 58 acres. Selected Cape Barley; 54 lbs. seed.

May 25th. 1½ acres. Cape Barley.

Drilled in with 240 lb. superphosphate to the acre.

No. 6 C.—Barleys.

Sown May 25th to 29th.

| | | |
|---------------------------|-----------------------|---------|
| Short-headed Erect Barley | 78 lbs. seed per acre | 5 acres |
| Guymalaye Barley | 95 lbs. " " | 5½ " |
| Cape Barley | 75 lbs. " " | 12½ " |

Drilled in with 240 lbs. superphosphate to the acre.

Remainder of No. 6 D.—Wheat.

Sown May 29th.

| | | |
|-------------------------|-----------------------|----------|
| King's Early (selected) | 60 lbs. seed per acre | 3½ acres |
| Gluyas | 70 lbs. " " | 10 " |

Drilled in with 2 cwts. superphosphate to the acre.

Ebsary's C.—Wheat.

Sown June 4th to 11th.

| | | |
|---|-----------------------|----------|
| King's Early | 80 lbs. seed per acre | 36 acres |
| Drilled in with 240 lbs superphosphate to the acre. | | |

Odd End No. 4—Wheat.

Sown June 8th to 14th.

| | | |
|---|-----------------------|----------|
| Gluyas | 70 lbs. seed per acre | 20 acres |
| Drilled in with 2 cwts. superphosphate to the acre. | | |

Experimental Field.

| | | | |
|--------------------|-----|------------------------------|---------|
| Sown April 9th | ... | Mangels (Orange Globe) | 2 acres |
| " " 9th | ... | Turnips (Mammoth Purple Top) | 2 " |
| " " 16th | ... | Oats (White Liggowo) | 2 " |
| " May 4th | ... | Barley (Selected Cape) | 2 " |
| " 9th to 27th | | Wheat (Gluyas) | 40 " |
| " 27th | ... | Beans (Horse) | 2 " |
| " 28th to June 1st | | Wheat (Gluyas) | 26 " |
| " 18th | ... | Peas (Field, Early Dun) | 2 " |

The Annual Break-up.

THE annual awarding of diplomas and distribution of prizes in connection with the Roseworthy Agricultural College took place on Tuesday, March 26. There was a large attendance of students, friends, and others interested in the College, including the Minister of Agriculture (Hon. L. O'Loghlin), Mr. Coombe, M.P., Messrs. John Miller and A. M. Dawkins (Advisory Board of Agriculture), and the Mayor of Gawler (Mr. Arthur Smith). The Minister presided, and said the College had completed the twenty-fourth year of its existence.

The Principal (Professor Perkins) presented a very encouraging report, in the course of which he pointed out that during the year 1906-7 the attendance of students had reached a record number, 71 having been enrolled ; that a new dormitory had been built to give a single room each to two new masters and twenty-four students, and that tenders had been called for the erection of a chemical, a biological, and two research laboratories. He then referred to the Diploma Examinations, 1907, as follows :—The results on the whole are satisfactory, although I will not take on myself to say that they could not have been bettered. The average diploma percentage for the year is represented by 69·77 ; this percentage has been surpassed on two previous occasions only, namely, in 1905 and 1906. From the time that I had come to know them well I had formed very high expectations of students of this year, and however satisfactory in ordinary circumstances an average of 69·77 per cent. may be, let me say I expected even higher results. Some of the candidates, however, have done remarkably well ; the gold medallist, Mr. W. T. McLean, ties with Mr. H. P. L. Büring, of 1897, and Mr. R. Wiese, of 1905, for the highest diploma percentage ever secured here. The second man on the list, Mr. J. H. Room, has also acquitted himself well.

We inaugurate in the present year a special classification of diplomas in order of merit. Candidates securing over 80 per cent. of the total aggregate marks are in future to be awarded a diploma of the first class ; those securing between 60 and 80 per cent. a diploma of the second class ; and those securing between 50 and 60 per cent. a diploma of the third class. In addition to this we propose awarding special honors to those securing over 85 per cent. in any individual diploma subject. I trust that these changes will prove an additional stimulus to those desirous of distinguishing themselves in their College career. Two candidates have this year earned a diploma of the first class, namely W. T. McLean, with 83·5 per cent., and J. H. Room, with 81·2 per cent ; both are to be congratulated on their success. A review of our past

records shows that in only six other instances has a percentage above 80 been attained, and, as the list is so small, I shall further encroach on your indulgence by reading the names:—

| | | | | |
|------|---------------------|-----|-----|----------------|
| 1897 | H. P. L. Büring | ... | ... | 83·5 per cent. |
| 1898 | W. J. Colebatch | ... | ... | 83·2 per cent. |
| 1902 | R. H. Martin | ... | ... | 83·0 per cent. |
| 1902 | A. E. V. Richardson | ... | ... | 82·0 per cent. |
| 1905 | R. Wiese | ... | ... | 83·5 per cent. |
| 1906 | R. C. Pocock | ... | ... | 81·6 per cent. |
| 1906 | J. Tassie | ... | ... | 80·2 per cent. |
| 1907 | W. T. McLean | ... | ... | 83·5 per cent. |
| 1907 | J. H. Room | ... | ... | 81·2 per cent. |

UNIVERSITY B.Sc. COURSE.

Some years back the University of Adelaide decided to give a degree in agriculture in conjunction with this Institution. Until recently, however, there have been no candidates for this degree. It is, therefore, with pleasure that I announce that the two pioneers in the movement that does honor to the University—Messrs. A. T. Jeffries and L. T. Cowan—have succeeded in passing with credit to themselves the examinations and tests in the purely technical subjects, the teaching of which is undertaken by the College. I trust that others will soon be found following in their footsteps.

VALE.

Let me next thank all those who have been good enough to take an interest in the Institution, by presenting prizes for competition by the students. I am sure that their generosity and thoughtfulness are much appreciated by staff and students alike.

Lastly, let me say that to me the year has been indeed a pleasant one; and I believe that, notwithstanding the usual mutterings characteristic of our race, the year has been a pleasant one to all of us. It is now sped by beyond recall; let us trust we shall profit by its lessons. To those who leave us, I wish godspeed and good luck; enjoyable holidays and renewal of vigor to those whom we may expect back for seeding.

THE MINISTER'S ADDRESS.

The Chairman said that it gave him great pleasure to preside, and on behalf of the Government he expressed his satisfaction with the report just read by the Principal. (Cheers). It showed that the College was advancing in public favor. To have increased their numbers from 45 three years ago to 71 now was good evidence of the increasing popularity of the Institution. He was also pleased that the efforts made by the Ministry to give better accommodation had been appreciated. He was sorry that the

attempts made through the giving of scholarships to attract country students had not been more successful. The time was coming, however, when their efforts in that direction would receive a better response. (Hear, hear.) Although he was a farmer himself he felt rather nervous in speaking before Agricultural College teachers and students, who probably knew more about agriculture than he did. (Laughter.) One could not help being struck with the great strides made in farming even during the period represented by his, the speaker's, lifetime. It was wonderful. When he was a boy farming was very different to what it was to-day. At that time it took two men to work a single-furrow plough—one to drive the bullocks and the other to hold the implement, and both walking. To-day one student could work a six, eight, or ten-furrow plough, and sit on the implement all the time. (Laughter from students.) They could plough eight or ten acres a day, against one 40 years ago. The same progress had been made in harvesting and seeding operations. Things were much better to-day in that respect, and he was sure the knowledge which the students were gaining at the College would enable them to make the most of the improved condition of things. He knew that they had to pay higher prices for land, and it was harder to get on a farm than in the old days, but when they got their land they would be possessed of the ability to make better use of it than the farmers in the old days, and they would be able to make money more quickly. His advice for all those who could was to get on the land. There were too many young fellows knocking about the City looking for work. (Hear, hear.) If they obtained land they could make their own future. They might not be able to dress so nicely as the young fellows in the city, but they would be happier, and would be making money for themselves. (Cheers). He was sure those who were remaining at the Institution appreciated the teaching of Professor Perkins and the staff. The teachers laid themselves out to give the students the best training they could, and the Government were determined to accord them all the help possible. (Cheers.) He wished to see the Roseworthy College one of the best of its kind in the Commonwealth. (Hear, hear.) Competition was so keen that farming must be up-to-date as well as other things, and they would do their best to assist the farmer to turn his land to the most beneficial use. (Cheers.) Unfortunately a large area of the land in South Australia was outside the line of rainfall. It therefore behoved them to do the best with the soil they had in the rainfall districts. (Hear, hear) It was the policy of the Government to get land wherever they could obtain it, and to see that the people made the most of the land there was. (Cheers). He wished godspeed to the students who were leaving the Institution.

He hoped they would prosper wherever they went, and that they would be able to spread their knowledge to the benefit of the State. (Cheers).

Mr. Coombe, M.P., in proposing success to the College, congratulated the Minister, the Principal, the students, and the State on the improved position of the College.

Mr. John Miller seconded, and the Principal replied.

DIPLOMA AND PRIZE LIST.

DIPLOMAS (in order of merit).

First Class.—1, William Trail McLean, with honors in wool-classing, fruit culture, chemistry, surveying, book-keeping, oenology, dairying, and aviculture ; 2, James Henry Room, with honors in wool-classing, veterinary science, book-keeping, dairying, and aviculture.

Second Class.—3, William Rowland Fairweather, with honors in dairying and wool-classing ; 4, Cyril Stuart Robertson, with honors in wool-classing, dairying, and aviculture ; 5, Ralph Baker, with honors in surveying ; 6, John William Crompton ; 7, Gilbert James Snell, with honors in book-keeping ; 8, William Leslie Roy Donnell, with honors in dairying ; 9, Walter Motteram, with honors in dairying.

PASS LIST (in order of merit).

Second Year.—1, Fred. K. Watson ; 2, William C. Kuhne ; 3, Morton Dunlop ; 4, Stephen C. Billinghurst, 5, John A. Horrocks ; 6, Roy G. Williams ; 7, Edward J. Clarke ; 8, John C. Buttfield ; 9, Osmond J. Howard ; 10, Alec A. Magarey ; 11, Kenneth S. Wilcox ; 12, Francis C. Barritt ; 13, John K. Gardiner.

First Year.—1, Laurie S. Davie ; 2, Frederick J. Kuhne ; 3, Douglas A. Byard ; 4, Philip S. Richardson ; 5, Edward L. Orchard ; 6, Talbot W. Sobels ; 7, William A. Carter ; 8, William Y. Goldsmith ; 9, Elias M. Judell ; 10, Arnold C. Sandland ; 11, Clarence W. Cooke ; 12, Howard J. Reynolds ; 13, John R. Hocking ; 14, Sydney E. Hall ; 15, Evan O. Brown.

PRIZE LIST.

Gold medal (presented by Alick J. Murray, Esq.), highest aggregate in all diploma subjects, William Trail McLean.

College second prize, James Henry Room.

Old Students' Cup (presented by Old Collegians' Association), highest aggregate in Agriculture and Veterinary Science, James Henry Room.

Gold Medal (presented by Messrs. James Martin & Co.), for best practical work, Walter Motteram.

Chemistry prize (presented by W. R. Jamieson, Esq., B.Sc.), William Trail McLean.

Viticulture and Winemaking (presented by Professor Perkins), William Trail McLean.

Second Year.

College silver medal, highest aggregate in all subjects, Fred. Keith Watson.

College second prize, William C. Kuhne.

Viticulture prize (presented by H. Büring, Esq.), F. K. Watson.

Farm dairies prize (Presented by Professor Perkins), Morton Dunlop.

College prize, for best outside work, William C. Kuhne.

First Year.

Silver medal (presented by A. L. Brunkhorst, Esq.). Laurie S. Davie.

College second prize, Frederick J. Kuhne.

Farm dairies prize (presented by Professor Perkins), Douglas A. Byard.

Book-keeping prize (presented by F. W. Russack, Esq.), Laurie S. Davie.

College prize, best outside work, John R. Hocking and Talbot W. Sobels (*&eq.*)

The Minister of Agriculture (Hon. L. O'Loghlin) has promised to give a special prize for book-keeping in 1908.

The Ridley Memorial.

THIS matter must of necessity rest for a time until we can form some idea as to the funds likely to be available. I hope members are doing all in their power to obtain subscriptions so that we may be able to carry out the work worthily.

By September we hope all members will be able to show full cards, so that a substantial amount may be paid into the bank. The Misses Ridley were communicated with, in England, and they wrote expressing gratitude that the work of their father was to be acknowledged in a tangible form, and they have sent a fine copy of a painting of the inventor. This is to serve in the production of a statue, and then to be hung at the College.

If members would forward any money already collected it can be paid into the bank and interest obtained.

H. E. LAFFER, Hon. Sec. and Treasurer.



THE ALMOND TREES AT THE COLLEGE.

Social Matters.

By "NEMO."

A small dance was given by the students on June 7th, which proved a great success, although it was somewhat marred by the climatic conditions. The dining room was tastefully decorated with vine leaves intermingled with a little variegated bamboo, which gave a pretty effect when the acetylene gas, which has lately been installed throughout the College building, was lighted. The supper room and tables were also decorated with a few vine leaves, to which we added flowers and asparagus fern, which trailed from vase to vase on the supper tables.

Professor and Mrs. Perkins received the guests, who soon had the "timid" students describing unlegible heliographs on their programmes, and dancing commenced and proceeded merrily till the hour of 12.30 a.m. on Saturday morning.

Some alarm was caused to the fairer sex by the acetylene gas, which found it convenient to go out, which was soon rectified by the addition of some more carbide to the generator.

The students' thanks are due to Mesdames Perkins, Laffer, and Richardson, who worked so energetically in the morning decorating the supper and dining room, for their services, and to Mrs. Russack, for the efficient way she assisted the Committee with the supper, to which the dance owed much of its success.

Sports and Dance Committees.

PRESIDENT—Professor Perkins; Vice-Presidents—Professor Angus, Mr. F. Russack. Secretary of Sports—E. J. Clarke; Assistant Secretary—D. A. Byard. Treasurer—R. G. Williams. Committee—J. A. Horrocks (3rd year), L. Davie (2nd year), G. Wells (1st year). Captain of Football Team—F. T. Cooper; Vice-Captain, J. H. Gardiner. Captain of Tennis Team—J. A. Horrocks; Vice Captain, R. G. Williams. Tennis Committee—R. G. Williams (3rd year), T. Sobel (2nd year), G. Wells (1st year). Dance Committee—J. A. Horrocks and J. C. Buttfield (3rd year), W. Shadforth and D. A. Byard (2nd year), C. Sangster (1st year). Student Committee—J. A. Horrocks (Editor) and R. G. Williams (3rd year), L. Orchard and P. S. Richardson (2nd year), H. Cherry (1st year). Council Committee—F. K. Watson (3rd year), W. Shadforth (2nd year), G. Wells (1st year). Football Selection Committee—F. T. Cooper (Capt.), J. K. Gardiner (Vice-Capt.), E. J. Clarke, S. E. Hall, and G. Wells. Librarian—Mr. F. Russack; Sub-Librarians—F. K. Watson, W. Kühne, S. C. Billinghamurst, Morten Dunlop.

Tennis Notes.

By "DEUCE."

THE new year for the College opened on May 7th, and a scarcity of last year's players was noticed at the courts. All the members of last year's team excepting J. A. Horrocks, G. R. Williams, and L. Davie have left, so that this year's team will be composed of practically new material.

G. R. Wells is the only player of any class, and what we have seen of his play so far is very sound, his back stroke being particularly good.

W. A. Clutterbuck should develop into a good man if he practices, as he has a good reach, and has a very fair service.

We have decided to have the annual tournament next session when the light in the evenings will be better.

There has not been very much tennis played this session, as football practice and the weather has interfered somewhat.

We have had no luck so far this session, as it turned out too wet to go into Gawler to play Dr. Maher's Club on June 1st, and the School of Mines had arranged to come up on the 3rd inst., but at the last couldn't manage to turn up. The team picked to play in the above fixtures met, and unanimously elected J. A. Horrocks as Captain.

The tennis season last year ended very appropriately by a trip to town of a very representative team. Unfortunately F. H. Shand was away at the time, but his place was ably taken by L. Davie and T. W. Sobels respectively. The following players composed the team : J. A. Horrocks, Capt.; C. H. Heath, J. H. Room, G. R. Williams, R. Donnel, C. S. Hall, McKay, L. Davie, T. W. Sobels. The last two took it in turns to play. We caught the ten to 10 a.m. train to town on March 3rd, and in the afternoon went out to the Prince Alfred's, and though we suffered defeat it was a very hard struggle for every set. A photo. was taken of the team in front of the College, and after tea we parted to meet next at M. Denton's place, at Prospect. It was decided only to play doubles, which arrangement was satisfactory, as every double then played four sets. After a good spell on Sunday we went out to the University on Monday, and after a hard afternoon's tennis found ourselves rather badly beaten. I regret to say the scores of this match have been lost. The following are the results of the other two matches :--

P.A.C. v R.A.C.

Thomson and A. Cooper v Horrocks and Williams, 9-6; Holder and Graves v Heath and Hall, 9-4; Pflaum and W. Cooper v Donnell and Davie, 9-6; Davey and Moore v Room and Kay, 5-9. Thomson v Horrocks, 7-6; A. Cooper v Heath, 6-7;

Holder v Williams, 7-5 ; Graves v Room, 7-1 ; Pflaum v Donnell, 3-7 ; W. Cooper v Hall, 4-7 ; Davey v Kay, 7-6 ; Moore v Davie, 7-6. Result—P.A.C., 8 sets, 80 games ; R.A.C., 4 sets, 70 games.

PROSPECT v R.A.C.

Chambers and Packard v Horrocks and Williams, 6-5 ; Chambers and Packard v Heath and Hall, 6-4 ; Chambers and Packard v Kay and Room, 6-1 ; Chambers and Packard v Donnell and Sobels, 6-1. Small and Ward v Horrocks and Williams, 6-3 ; Small and Ward v Heath and Hall, 4-6 ; Small and Ward v Kay and Room, 6-3 ; Small and Ward v Donnell and Sobels, 6-3. Jacob and Seadon v Horrocks and Williams, 5-6 ; Jacob and Seadon v Heath and Hall, 6-5 ; Jacob and Seadon v Kay and Room, 4-6 ; Jacob and Seadon v Donnell and Sobels, 6-2. Barker and Johnson v Horrocks and Williams, 6-5 ; Barker and Johnson v Heath and Hall, 3-6 ; Barker and Johnson v Kay and Room, 6-5 ; Barker and Johnson v Donnell and Sobels, 5-6. Results—Prospect, 87 games ; R.A.C., 67 games.

The Football Trip.

By "Follower."

"**L**ET 'em go, Zillion." The whip cracked, and the old drag once more bumped along out of the College gates for Roseworthy, bearing the College Football Team to the gay metropolis to meet three teams from Adelaide Colleges. The progress to the station was slow and consisted chiefly of walking owing to the weak team (horses, not footballers). Some lads said it was the man behind the ribbons caused it, but it would, we know, be absurd to doubt Zillion's prowess at horsemanship. At all events the team safely arrived at Roseworthy, and later to Adelaide, cheering themselves up by good old College songs.

The first match was with the School of Mines, and took place on the Hindmarsh Oval. From the bounce the College took charge, and at half-time had a substantial lead of eight goals. After the respite the Collegians drew still further away, and at the bell were streets in the lead, the final scores being 16 goals 16 behinds to 4 goals 3. The best players for the College were Stephen (following and forward, who shone conspicuously right through the game), Weste, Wells, Baker, Hall, Gardiner and Wilcox ; and the losers best represented by King and Mellor and Maughan. Goal-kickers — Stephen 6, Weste 3, Hall 3, and Fairweather, Baker, Magarey and Davie one each. The umpiring was carried out in a very satisfactory manner.

After the respite of Sunday the Roseworthy team looked pretty fit on entering the Adelaide Oval to meet Prince Alfred College on Monday afternoon. There were a fair number of spectators. The Princes were also well, but were of a lighter, faster calibre ; the good state of the ground was thus in their favour. The Roseworthyites started well, and quickly registered a goal and a couple of points—Hall hitting the post. The Prince Alfreds then had the game to themselves for the next quarter, and kicked five goals in quick succession, giving them an excellent lead. The game from then onward was fairly even, though the Princes kicked with greater accuracy than the College, whose kicking was very erratic, thus costing them the match as shown by the scores. The umpiring of this match was unsatisfactory, as the man in charge was the Princes' coach, and seemed to regard the match as a little bit of practice for "his boys." The P.A.C. were best represented by Plumstead (4 goals), Thomson (2), Wilcox, Puddy, Willsmore and Holder one each ; and for the farmers Hall (2 goals), Stephen and Weste one each. Fairweather, Baker and Horrocks also put in good work. Scores—Prince Alfred, 10 goals 2 behinds, and Roseworthy, 4 goals 9 behinds.

Tuesday afternoon saw the last match, Roseworthy being opposed to St. Peter's College in the presence of a fair crowd. The Roseworthys lacked the combination of their opponents, and were slower in the forward lines but by sturdy play were in the lead at the end of the first quarter. From then, however, St. Peters drew away, finally winning by 10 goals 14 behinds to 4 goals 10 behinds. It will be seen by the last two matches that the kicking of the agriculturalists was very faulty. The winners were at their best in James (4 goals) Robertson (3), LeMessurier (1), Taylor (1), McKau and Murphy ; while Roseworthy best represented by Stephens (3), Fairweather (1), Baker, Hall, Wells, and Horrocks. The last four also played a good game. Mr. Ewers umpired, giving great satisfaction.

Thus ended the trip, the students catching the evening train for home, and although they only had one win they still remember that the farmer boys are "The Bone of the Country."

Goal-kickers for the trip.—Stephen 10, Hall 5, Weste 4, Fairweather 2, Davie 1, Magarey 1, Baker 1.

Tongue Ticklers.

It

Is

Over the odds

George Washington.

The springs in John's cart.

Possom skins are becoming very scarce.

A new invention in phonographs, "The Living Record."

Port Adelaide.

PORT ADELAIDE is situated on an estuary of the Gulf of St. Vincent, and is about nine miles from the mouth of the river.

This year it now enters upon its sixty eighth of existence. That number of years ago, where the leading seaport of the State now stands, was nothing but a shallow stream, and a mangrove swamp. From that time onward the building up of the Port, and the deepening of the stream, has been literally proceeding. A few of the fast vanishing landmarks in the shape of old houses remain to show the original street levels. These ancient structures would be as accessible from the pavement by way of the chimney as from the door, seeing that the footpath makes a half-way compromise between the floor and the roof. Much attention had to be paid to the raising of the streets, that for many years little indeed could be done towards the improvement of the surface, but the splendid municipal work of recent years has robbed the Port of special claim to be now described as "Mudholia," and "Dustholia." In speaking about the shipping, and conveniences for ships to come up to the wharves to enable them to unload their cargo, Port Adelaide has greatly improved in the last few years.

The first of these wharves to be seen is the Ocean Steamers, and is owned by the Government. At this wharf most of the ocean steamers are berthed, there being about 32 feet of water at high tide, and 26 feet at low tide. Just lately the Government have purchased the land lately occupied by the Block 14 Company. On this land they intend to have their slaughter yards, and not at Dry Creek as previously. This land being near their wharf, they have the freezing works, butter factory, and slaughter yards all by the Ocean Steamers' wharf, thus enabling them to ship over their own wharf, that making expenses lower owing to no wharfage fees, &c., to pay. Then opposite this wharf is a small one owned by D. & J. Fowler, for the boats to come to loaded with kerosine.

The next wharf is the No. 1 Quay; then follows the Commercial, or Adelaide Steamship Company's wharf. By this wharf is a bridge which opens to allow ships to pass into the Basin, and thence through another swing bridge into the New Dock. Every day may be seen boats loading and unloading in the New Dock, wool and timber, respectively, to and from the different timber mills and wool stores. The other wharves are MacLaren, Queen's (lately improved and straightened to allow the two biggest Inter-Colonial traders to berth, these two boats being 7,000 tons gross tonnage), Prince's, Copper Company's, and lastly the Corporation, which is owned by Walter & Morris, Ltd., for their timber trade. The whole of the harbour, from the Corporation wharf to No. 1 Quay, has been deepened, while the channel has also been widened.

It is considered that there is enough water in the harbour for any ordinary ship which comes up at high tide to lie afloat at low water, it being, of course, understood that the ocean steamers use the special wharves provided for their accommodation down the river. These wharves are extensive and convenient, being furnished with steam hoists, cranes, railways, pipes supplying fresh water for the use of shipping, and all appliances of a first-rate wharf. There is not much to be said about the City of Port Adelaide. Three public buildings stand out in prominence, on account not only of their size, but also of the nature of the business daily transacted within the walls. The one is the Town Hall, around which the municipal, political and social life of the district centres; the second is the Custom House, containing all the Marine Board offices, where the mercantile and trading interests are carried on ; and the third, which adjoins the Custom House, is the Institute. This Institute is about the largest in South Australia, and there are many branches of it in towns out of Port Adelaide.

The main business of the City is carried on in a street at the northern end, where most of the offices are, and also the banks, which number seven. The population of the city comprises 20,100, of which many of these are engaged in wool stores, large flour mills, timber mills, and the facilities for handling cargo, which are done by the Port Adelaide stevedores, who can handle about 800 tons of cargo in ten hours. After all Port Adelaide is a very busy city, and for a country boy there is much to see ; and one could spend a pleasant day looking round seeing the way cargo is handled to be loaded on ships.

Port Lincoln and its Surroundings.

By " Harbour Lights."

ON the most Southern portion of the West Coast of South Australia is situated the splendid harbour and pretty township of Port Lincoln.

It is surrounded by hills, from the summits of which may be seen islands many miles out to sea.

That part of the harbour which directly faces the township is known as Boston Bay, taking its name from Boston Island, the great natural breakwater.

This island is about eleven miles in length and two in breadth, and stretches across the mouth of the harbour, leaving two narrow entrances at each end between its extremities and the mainland. The harbour which, it has been said, will contain the navies of the world, is split into several parts, the most prominent of which are Boston Bay, Spalding's Cove and Proper Bay, each of which is a haven of safety in itself.

Spalding's Cove is easily reached by a short voyage of seven miles, and is often visited by picnic parties, who climb the hill which is the pedestal to the monument erected to the memory of Captain Flinders, the famous discoverer and explorer.

Proper Bay may be reached by either land or sea : the shorter route, that by land, being only three miles. This land-locked bay is beautiful to look upon, and a visitor might easily be excused for thinking it a lake.

No greater contrast could be wished for than that between Proper and Sleaford Bays, Sleaford Bay, being about seventeen miles south of Port Lincoln. Here the Southern Ocean rushes in unchecked, and, dashing itself against the cliffs and rocks, throws its spray high into the air, until the coastline, as far as can be seen, seems to be shrouded with a fine sheet of snow.

Until recently the land on the edge of the West Coast was all that the farmers cared to cultivate, but, since the Government has recognised the sterling agricultural qualities of its great internal area, land-seekers have flocked to the numerous newly-opened districts ; and now, with the railway tapping a great sheep and wheat-growing area, until now undeveloped, great things may be justly expected of the West Coast.

During the last few years this district has been one of the most progressive parts of this State, in that it has materially increased both its wheat yield and wheat-growing area.

The main disadvantage with which the West Coast has to contend is its distance from a suitable market, and this has a bad effect on other branches of agriculture.

Difficulties are now being fast overcome in this district, and it is the hope of every genuine West Coaster that this obstruction will soon be removed, either by railway connection with the rest of the State, or by the opening up of fresh markets for the products of the cultivation of the soil.

Broken Hill.

By "Dingo."

BROKEN HILL is the principal silver mining centre of Australia. It is distant about 925 miles west of Sydney, and 42 miles from the South Australian border, or 333 miles from Adelaide. The population of the town and district is about 36,000, all of whom are practically dependent on the mines for a livelihood.

The principal mines at work along the line of lode are—The Proprietary, Central, Block 14, Block 10, British, South and North. Of these the Proprietary is by far the largest, in fact it is the most

prolific silver mine in the world. This mine employs about 4,000 men on the mine alone, with about another 2,000 men on the refining and smelting works at Port Pirie, South Australia. The mine is worked day and night in three "shifts," with its concentrating plant always going.

The Barrier mines altogether provide employment for about 9,000 men, and the monthly extraction of ore amounts to 100,000 tons, producing approximately 170,000 tons of lead per annum--equal to about 30 per cent of the whole production of lead in the world.

Some idea as to the magnitude of the mining industry on the Barrier may be gained when it is known that the total sum distributed in hard cash in a fortnight amounts to about £45,000 on a "big pay" day—that is to say, when the disbursements of the Proprietary mine are added to those of the smaller mines; provided of course that the fortnight's pay of the said smaller mines fell on the one day. Put it another way, the "pay" to mine employees along the main line of lode aggregates £22,500 per week. But this total does not include amounts paid by contractors, some of whom have large staffs of skilled workmen engaged in construction works; nor must the weekly payments made by the Silverton Tramway Company, the business people, and other employers of labour be overlooked.

One great drawback to Broken Hill is the want of an adequate water supply. The present source of supply, Stephens Creek Reservoir, has been proved to be quite unable to cope with the consumption in a rather dry summer; and having, as it does, a large surface area, the amount of evaporation annually is enormous—something like 7 ft. The Government of New South Wales has been approached time after time with the same result, that no move is made to provide a really lasting and unexhaustive supply, which could readily be obtained by tapping the Darling at its nearest point, Menindie, some sixty odd miles from the Hill. Latterly the Municipal Council, aided by some of the mines, have formed a trust to finish the Umberumberka scheme, which was started by the Government some years ago, and it is hoped that this reservoir, when finished if it is ever finished [?]), will put an end to all water famines.

The climate on the Barrier at this time of the year is about all that one could wish for, but during the summer months it has a different aspect altogether; everything is dry and parched, and not a blade of green is to be seen outside of a garden, and sometimes not there, for water is a very expensive item on the Barrier, running as it does to about sixpence per 100 gallons.

Judging by the many costly new buildings that have been erected in and about the town within the past few months by private enterprise, there seems to be no lack of confidence as to

the future of Broken Hill. On all sides are evidences of prosperity ; and yet it is difficult to get the New South Wales State Ministry, and others in authority in Sydney, to recognise the fact. Should, however, Broken Hill be subjected to another water famine, the importance of this "little back-blocks township" will be asserted in a less congenial way than is conveyed by the above figures, which any State other than New South Wales would be proud to quote.

Hobart.

By G.R.B.W.

HOBART is the capital of Tasmania, and has a population of about 50,000 inhabitants. It is situated in the south of the island, on the Derwent, and nestles under Mount Wellington, which stands up behind, some 4,066 feet above sea level.

The River Derwent has been navigated fifteen miles when Hobart is reached, and it forms a very protected harbour ; while the largest boats afloat can come right up to the wharves.

Hobart has two suburbs across the river, the largest being Bellerive, which communicates with the city by means of a fast 20-minutes' ferry boat service, and is therefore becoming a favorite residential locality. Lindisfarne is further up the river, and has only an hourly service, being therefore rather out of the question for business men, but is a great place for invalids.

Sandy Bay is the most southerly suburb. It is on the same side of the river as Hobart, and is connected by the tram service. It is a favourite place for picnics, having a fine beach.

"The Cascades" is right at the foot of Mount Wellington, and is journeyed through on the way up ; it is also famous for the ale manufactured there.

Newtown is the most northerly suburb. The tram service runs through it from town. There is a very good oval and bowling green out there—the best oval, and known popularly as "The Top" Cricket Ground because it is situated on the Queen's Domain. The Domain is a long hill of fairly uniform height for about two miles, situated between the river and the city. The trees have been nicely spaced, and the road, by which it is encircled, in gradually ascending it makes a splendid drive, and is greatly patronised by tourists. The road is a splendid one for a train for long distance running, and is used a lot by footballers and harriers for that purpose. The Domain slopes away at the south, and forms what is called the Lower Domain, where an ancient old fort, the Queen's Battery, is situated. This point is used for sailing the regattas off, as it is a great place for a crowd to see the events from.

The Hobart Baths and the Derwent Rowing Sheds are situated beside the river below the fort, and further up, to the north, Government House is prettily situated near the entrance to the Botanical Gardens, which follow the river bank for some distance. The river is at this point about two and a half miles wide, and is a great place for yachting, this being a very popular pastime at present.

Hobart is the summer anchorage of the Australian Squadron, and has a gay time during the visit. The apple season is a very busy time at the wharves, as some of the biggest boats in the world call for the fruit.

The Hobart Post Office is only a newly-erected building, and the chimes were procured by public subscription.

The Mercury is the leading daily paper, and *The Tasmanian Mail* is the chief weekly.

The Theatre is very small, and is really very small compared with the size of the city ; but as the proprietors of the chief newspaper have an interest in it, all suggestions of competition are sat on.

The electric cars are splendid, and latterly the lines have been relaid with solid grooved rails, so that the cars run as smoothly as could be wished.

Of the hotels Hadley's Orient, Heathorn's and The Carlton Club are the best ; but the absence of good refreshment rooms is very much noticed, especially by tourists I should think.

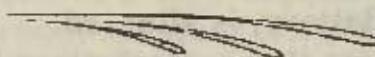
Hobart has grown considerably in the last ten years, a great number of houses having gone up, especially Mount Stuart and Newtown districts. A great many houses are roofed with shingles, and they are still a favourite method, as they are warm in winter and cool in summer.

The water supply is stored in reservoirs situated many hundreds of feet above the city. The water is collected from the springs on Mount Wellington, and run into a main channel to the waterworks, and a very good pressure is maintained.

Underground drainage is being laid down, and when completed will be a sanitary improvement well worth the money expended on it.

The chief school is The Friends' High School, which was founded by the Society of Friends, in England. Leslie House School and Queen's College are its chief rivals.

The above is a very inadequate description of the city itself, but to describe its surroundings properly would fill volumes.



The Honey Bee.

By "Drone."

In this article I shall confine myself more to the description of the inmates of the hive and the functions they perform than to the principles of bee-keeping.

If a farmer is keeping bees it is as important that he should know all the leading facts in connection with the life history and breeding of the bees as in the rearing of his domestic animals.

At the present time most people interested in bees in a small way, seem to be content with a few half-digested notions of the life history and functions of their small friends, having no ambition to hunt for information. So I shall here endeavour to describe briefly the main points in connection with their life history and relative to the functions performed by them during that period.

Honey-bees are insects belonging to the order of Hymenoptera. They can flourish only when associated in large numbers, as in a colony, for if taken singly they are so helpless that even the chill of a summer night will paralyze them.

The home provided for bees is termed a hive, inside of which are seen a number of combs held in position by resting on the edge of the box : they are set about half an inch apart, and the number of them varying with the width of the hive. These combs are formed of hexagonal cells of various sizes, in which the bees raise their young and deposit their stores.

In a colony of bees are found :—

- 1st. One bee of peculiar shape, being much larger than any other bee in the hive, commonly called the queen. She is the only perfect female in the hive, and all the eggs are laid by her.
- 2nd. Many thousands of worker bees, or incomplete females, whose work it is, while young, to take care of the brood and do the inside work of the hive ; and when older, to go and gather honey, pollen, water, and propolis, or bee-glue, for the needs of the colony.
- 3rd. At certain seasons of the year some hundreds, or even thousands, of large bees, called drones or male bees, whose sole function is to fertilize the young queens, or virgin females.

The queen is the only perfect female in the hive, the laying of eggs being her sole function, and so well does she perform this duty, that it is not uncommon to find queens who lay more than 3,500 eggs per day for several weeks in succession during the breeding season, each egg being deposited in a separate cell. The laying of the queen is not equal at all seasons ; she lays most during the spring and summer months, previous to the honey crop and during

its flow. In late autumn and winter months she lays but little. Her shape is very different from that of the other bees, while she is not nearly as broad as the drone ; her body is longer, and as it is considerably more tapered than that of the worker, she has a somewhat wasp-like appearance. Her wings are much shorter in proportion than those of the drone or worker, but are in reality longer than those of the worker. Her motions are generally slow and matronly, although she can, when she chooses, move with astonishing quickness. No colony can long exist without the presence of this insect.

The queen is treated with the greatest respect and affection by the bees, which from time to time offer her food, and politely back out of her way to give her a clear path when she moves over the comb. When she is taken from them the whole colony is thrown into a state of intense agitation, and all the labours of the hive are abandoned, the bees rushing wildly about in search of their beloved mother. If she cannot be found, and no eggs or grubs be present in the combs, the bees set up a succession of wailings not at all like the ordinary hum. Should a piece of brood comb be then inserted, the bees will rush to it and cluster on it as if they here recognise a means of deliverance, and the wailings give place to the happy hum once more.

Early in the season, if a hive becomes very populous, and if the bees make preparations for swarming, a number of royal cells or queen cells are begun, being commonly constructed upon those edges of the comb that are not attached to the sides of the hive. These cells somewhat resemble a pea-nut in shape, and are about an inch deep and one-third of an inch in diameter ; being very thick they require much wax for their construction. They are seldom seen in a perfect state after the hatching of the queen, as the bees cut them down to the shape of a small acorn cup. These queen cells while in construction receive a very unusual amount of attention from the workers. Their importance to the community might easily be inferred from their being the centre of so much attraction.

While the other cells open sideways, the queen cells always hang with their mouth downwards ; this is simply to give room to form the cells between the combs.

The egg destined to produce a queen bee does not differ from the egg intended to become a worker ; but the young queen-larvæ are much more largely supplied with food than the other larvæ.

The peculiar mode in which the grub destined for a queen is treated causes it to arrive at maturity almost one-third earlier than if it had been reared a worker. Its organs of reproduction are completely developed, so that it can fulfil the office of a mother. Its size, shape, and colour are greatly changed ; its hind legs have

neither brushes or baskets, and its sting is curved and one-third longer than that of the worker. Its instincts are entirely changed. Reared as a worker it would have thrust out its sting at the least provocation, whereas now it may be pulled to pieces without attempting to sting. As a worker it would have treated a queen with the greatest of consideration, but now, if brought in contact with another queen, it seeks to destroy her as a rival. As a worker it would frequently have left the hive, either for labour or exercise ; as a queen it never leaves it after impregnation, except to accompany a new swarm.

The term of its life is remarkably lengthened. As a worker it would not have lived more than six or seven months ; as a queen it may live seven or eight times as long. The eggs are hatched three days after they are laid. The small grub, which is intended to produce a queen, is six days in its larvæ state, and seven in its transformation into a chrysalis and winged insect. These periods will vary with the warmth of the hive, and the care given by the bees. In from ten to sixteen days the hive is in possession of a new queen. The young queen, as soon as she has acquired some strength, travels over the comb looking for a rival, either hatched or unhatched. If she comes to an unhatched queen, she makes a hole in the top and enters her abdomen, stinging the undeveloped rival, thus killing her. The bees then set to work to remove the corpse of the dead queen.

[To be continued.]

Old Collegians' Association.

BEFORE the next issue of the *Student* appears the September Show will have passed, and I will take this opportunity of reminding old students not to forget the Annual Dinner. As usual this will take place on the Thursday night of Show week, and I hope that there will be a large gathering.

Business to be brought forward will include the Ridley Memorial and Life Membership.

The Association is growing gradually, and we have now 128 names on the roll. It cannot, however, be run without funds, so I would like all those who are in arrears to bear this in mind, and if they wish to have their names removed from the roll to say so.

If the expenses are to be borne by a few, then let us know it, and we will shape our course accordingly. The whole trouble arises through allowing the subscriptions to accumulate. The fact of the matter is, that the amount is so small that it is overlooked. Why not, then, pay several years in advance ?

We want the Association to be as strong as possible, and to this end existing members should induce non-members to join.

Several enquiries have been made with reference to Life Membership. The matter was brought forward at our last committee meeting, and after consideration was referred to the general meeting in September.

Mr. Muecke wishing to resign his position of Treasurer and Committeeman, the duties of Treasurer were undertaken by Mr. Yelland. I am sure that all members will be pleased to know that Mr. Yelland has still time to devote to the Association. Our thanks are due to Mr. Muecke for the service he has given the Association since its formation.

The addresses of many old students are vague and uncertain, therefore any who do not receive their *Student* will oblige by forwarding information as to their whereabouts.

H. E. LAFFER, Hon. Sec., R.A.C.

Correspondence.

"Pimple."—Re "Carbine." Would strongly advise you to float a company to put your new illuminant on the market, as it will in every probability displace "carbide" in bicycle lamps.

"Burd."—Upon enquiry, find that ammonia is not mentioned as a disease of animals, but expect you were thinking of pneumonia.

"E.D.C."—Would advise you as a remedy to be more circumspect in your footseps when negotiating the last turning of the stables.

"Shaddy."—Re your suggestions regarding a crematorium at a dance. We fancy a conservatory would answer your purpose better.

"Rumble."—Re your crop of "Paddy melons." Advise sowing with 6 cwt. of superphosphate to ensure a good crop.

"Egypt" (My Cleopatra).—Re ears droppers. We have not heard of such a medical instrument. They are usually applied to keyholes.

"F.K.W." Would strongly advise you taking up some form of more violent exercise than the drinking of hot water for the reduction of your adipose tissue. Since you have dropped this remedy we strongly advise you to dip strongly into Shakespeare.

"Dongie."—Re your enquiries for a moustache tonic. Advise obtaining some fine iron filings, mix well with your meals morning, noon and night, then sleep with a magnet suspended over your upper lip, and a fine growth will result. Re your tonic for football forwards. Take one or two doses of either Epsom salts or Beecham's pills, and get loose.



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Wanted to Know?

Who got welshed ?
Who rang the bell ?
Who's over the odds ?
Who will buy the bank ?
Who wears "pea" coats ?
Who composes the ruffians ?
What went wrong with the gas ?
Does the "Duke" go 'possuming ?
Who's a walking blacksmith shop ?
Where the mouse committed suicide ?
Who knocks when the postman comes ?
Who likes the old R.A.C. brand of bread ?
Who takes half an hour to put his hat on ?
Why there are so few earthquakes this year ?



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