

by the circular portion of the ciliary muscle and made to bulge in the centre explains all the clinical phenomena, which the old theory (Helmholtz's) failed to do. The aberration which the central bulging would cause at the margin of the lens is masked by the contraction of the pupil, which always accompanies normal accommodation; thus the accommodative power depends rather on the "squeezability" of the lens than the power of the muscle. Now this "squeezability" of the lens becomes less as the lens tissue becomes firmer. I have known in a young child the accommodative power to be as much as 20 D., whereas it is rare to find anyone above forty-five with an accommodative power higher than 4 or 5 D. Donders gave us a diagram showing the gradual loss of accommodative power through age, *i.e.* through the sclerosing of the lens, but he only examined 150 cases, and included in these some latent hypermetropes, so that he reckoned the accommodative power per age lower than it really is.

The diagram (Fig. 1) was prepared by me from 1200 cases, all of which were first made normal by correcting their defects. Donders's *mean* line is marked, and it is seen that it coincides practically with my minimum line from the age of thirty. From my table the presbyopic point may be said to be arrived at between ages forty-five and forty-eight; in other words, the emmetrope, or those made emmetropic by correction, must at that age have increased help for near work.

Age	Minimum	Mean	Maximum
7-10	9	14	18
10-15	7	12	18
20	6	10	14
25	5.5	9	13.5
30	4.5	7.5	12
35	4	6.5	10
40	2.5	5.5	8.5
45	2	4	7
50	1	3	6
55	0.75	2	5
60	0.50	1.75	4
65	0.50	1.5	3
70	0.00	1	2

In the above table made from my diagrams there is seen to be a great difference between the maximum and minimum. What is the cause of this difference? If a person has more accommodative power than the average it means that he is younger than his years, and if less, older.

Among the many causes of premature senility, which a lessened accommodative power implies, the following are the chief:—

(1) *Alimentary Toxaemia*.—As amply shown by Sir William Arbuthnot Lane. In these cases I have found the lens to be a very delicate index.

(2) *Eyestrain*.

(3) *Worry, Anxiety, Sorrow, and Overwork*.—This war has hastened the onset of presbyopia, and increased it rapidly in those already presbyopic, throughout England, and probably throughout Europe. The only preventive treatment is peace, but until that comes we should conserve all the nervous energy we have and not waste it.

Intestinal toxæmia should be removed by the surgeon or physician. Eyestrain should be prevented; if there is any defect besides the presbyopia (and it must be remembered that simple presbyopia is very uncommon, only about 1 per cent. of presbyopes) it must be corrected, and the invisible bifocal glasses, which correct the distant vision in the upper portion and the reading in the lower, give the best result. If two

separate glasses are worn they are not changed when they should be. The presbyopic period is just that time of life when it is most important to conserve all possible nerve energy. Responsibilities, worries, and anxieties are probably at their maximum, and we have not yet reached the callousness of old age!

Finally, for our own sakes and also for those around us, we should not make the most of our troubles; we should not go out to meet them, nor let "to-day's strength bear to-morrow's loads."

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

THE Board of Education has issued a circular (961) stating that with a few alterations the Regulations for Technical Schools, etc., in England and Wales (Cd. 7996) will continue in force for the school year 1916-17. The special regulations for grants in aid of instruction for men serving with the colours are withdrawn, as it appears from the returns of the work done during the past winter that there is now little demand in camp for classes of an educational character.

THE Weardale Lead Company is establishing two mining scholarships, each of the annual value of 60*l.*, in connection respectively with the Royal School of Mines and Armstrong College, Newcastle-upon-Tyne, with the object of combining university training with a year's practical work calculated to advance a student in the knowledge of mining engineering. The scholarships are to be known as the "Richardson" and the "Cameron," after two directors of the company.

THE first award of the annual prize of 40*l.* founded by the Earl of Cromer, and administered by the British Academy, for the best essay on any subject connected with the language, history, art, literature, or philosophy of ancient Greece, will be made before the end of 1917. The competition is open to all British subjects under the age of twenty-six years on October 1, 1917. Intending competitors must send the title of their proposed essay to the Secretary of the British Academy, Burlington House, Piccadilly, on or before December 1, 1916. The essays on approved subjects must reach the Academy by, at latest, October 1, 1917.

THE current issue of the *Reading University College Review* is concerned almost exclusively with the affairs of the college. It includes the sixth revised list of present members of the staff, past and present students, and present servants of the college who are serving with the Forces or in the French Army. The numerous notes which begin the review serve as an excellent record of the various developments in the activities of the college. Among these, the extension of domestic training may be mentioned. A scheme has been sanctioned for a diploma course in domestic subjects extending over two years, and for a certificate course extending over one year. The aim of these courses is to train girls of good secondary education to manage an institution, household, or home with practical efficiency and intelligence. Instruction in poultry-keeping has been inaugurated, and the work of the department of horticulture is being extended.

### SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, August 14.—M. Paul Appell in the chair.—C. Richet: The conditions which influence the average monthly deviation of the birth-rate. In countries with a high birth-rate (more than 350 per 10,000) the mean monthly deviation of the birth-rate

is more than double that of countries with low birth-rate.—E. Esclangon: The sound of gunfire and zones of silence. The detonations arising from the sudden expansion of gas at the mouth of the gun and from the explosion of the shell, even of the largest calibre, are inaudible at about 30 kilometres, and the author concludes that the sounds heard at distances of 50 to 200 kilometres from the front are due to the waves set up in the air by projectiles moving with initial velocities greater than the velocity of sound.—L. Bouchet: The electric expansion of solid insulators in the sense normal to an electrostatic field. The changes of length were observed by an interferential method for glass, ebonite, and paraffin. Calculations based on Maxwell's equation for the pressures normal to the field agree well with the experimental figures for paraffin wax, but are not in accord with the results for ebonite and glass.—R. Ledoux-Lebard and A. Dauvillier: Theoretical and experimental researches on the bases of radiological dosimetry.—Ed. Lesné and M. Phocas: The presence of living and virulent micro-organisms at the surface of projectiles enclosed in cicatrised tissues. Experiments with bullets extracted from healed wounds demonstrate the reality of latent microbism.

## NEW SOUTH WALES.

Linnean Society, May 31.—Mr. A. G. Hamilton, president, in the chair.—T. G. Sloane: Carabidæ from the Upper Williams River, N.S.W. In December, 1915, a party of naturalists, organised by Mr. W. J. Enright, of West Maitland, visited the part of the Mount Royal Range known as the Barrington Tops—a basalt-capped plateau, 5000 ft. above sea-level, from which the Barrington, Allyn, Paterson, and other rivers take their rise. The route followed was north-west from Dungog, along the Williams River; after the level of 3500 ft. is reached, the track keeps to the summit of the narrow ridge dividing the valleys of the Williams and Allyn Rivers, until, beyond the source of the Williams, Barrington Tops are reached, distant about 37 miles from Dungog. *Fagus moorei* is the predominant tree in the brushes at 4100 ft. and upwards. In one locality, near the southern source of the Barrington, at about 4800 ft., *Eucalyptus coriacea* was plentiful. Collecting was carried on in six localities, four of them above 4000 ft., and two much below. Representatives of forty-six species of Carabidæ were obtained, and have been identified, of which nine, and two varieties, are described as new. Eighteen species, all of which are known from the coastal districts between Sydney and the Clarence River, were found to occur below the level of 4000 ft. Specimens of twenty-eight species were collected above this level, mostly members of typical eastern Australian genera. The most striking is a remarkable species, doubtfully referred to *Trichosternus*, which appears to be more closely allied to certain New Zealand species than to any known Australian species. Another notable species is *Agonochila ruficollis*, Sl., hitherto known only from the forests of south-western Australia; but this is closely allied to a Tasmanian species, and to *A. binotata*, White, from New Zealand.—H. J. Carter: Description of a new genus and three new species of Tenebrionidæ from Barrington Tops, N.S.W. A genus, with the facies of *Cryptodus*, and presenting some resemblance to *Asphalus*, Pasc., with one species, and two species of *Cardiothorax*, are described as new.—The late Dr. A. Rutherford, with notes by E. Jarvis: A new scale-insect affecting sugar-cane in New Guinea. A new species of *Aulacaspis*, different from either of the two known Australian species, is described.

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## BOOKS RECEIVED.

- Highways and Byways in Galloway and Carrick. By the Rev. C. H. Dick. Pp. xxix+536. (London: Macmillan and Co., Ltd.) 6s. net.
- Bacon's Large-Scale Map of the British Battle Front. (London: G. W. Bacon and Co., Ltd.) 6d. net.
- Smithsonian Institution Bureau of American Ethnology. Bulletin 62. Physical Anthropology of the Lenape or Delawares, and of the Eastern Indians in General. By A. Hrdlička. Pp. 130. (Washington: Smithsonian Institution.)
- Domestic Science. By C. W. Hale. Part ii. Pp. x+300. (Cambridge: At the University Press.) 4s. net.
- Field and Laboratory Studies of Crops. By Prof. A. G. McCall. Pp. viii+133. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 3s. 6d. net.
- American Civil Engineers' Pocket Book. By M. Merriman and others. Third edition. Pp. ix+1571. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 21s. net.
- Parks and Park Engineering. By Prof. W. T. Lyle. Pp. viii+130. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 5s. 6d. net.
- Earth Pressure, Retaining Walls, and Bins. By Prof. W. Cain. Pp. x+287. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 10s. 6d. net.

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