

of artificial instead of natural selection further increases the rapidity of the results.

It must be borne in mind, too, that plants under cultivation are not necessarily grown for successive generations under the same conditions. While the change from the wild state to cultivation is as slight in some cases as it is profound in others, plants under continued cultivation are frequently subject to a succession of changes of environment as to soil, locality, water, manure, &c.; and we should therefore, according to well-known laws, expect to obtain a greatly increased number of variations in them. And these variations, as elsewhere, are coupled with a strong hereditary tendency, thus producing many new varieties.

Lastly, as regards the quotation from Mr. Herbert Spencer's essay, its terms are not at all inimical to natural selection, but apply to it equally well—a remark which, I cannot but feel, also applies to the bulk of Prof. Henslow's work. C. A. B.

#### A Remarkable Discharge of Lightning.

[The following letter was sent to the Royal Society, and has been forwarded to us by the Secretary.—ED. NATURE.]

I THINK it may interest you to know that an extraordinary flash of lightning was witnessed from this place, this evening, at 7.38 p.m. It has been raining in torrents nearly all day long; the heavens seem heavy and saturated with rain, but we have had no thunder at all.

Now the undersigned were seated round a table in a room in Fife Street, and only one of us had his eyes turned in the direction of the door, which was open. Suddenly he exclaimed, "Good heavens! just look at that lightning; it's standing still!"

All of us promptly went to the door, whence we witnessed a truly extraordinary sight in the shape of three ribbons of a greenish white lightning, which hung in the sky, motionless, for what must have been fifteen to twenty seconds. It seemed to be a long way off (in a north-westerly direction), as we heard no report of thunder whatever. We put some questions to our Makalaka boy, who said that he had never seen anything like it in all his life.

There could be no mistake about it—it was as distinct as possible; and it must have lasted fifteen seconds at least (I should say twenty myself). I can refer you (should you desire to know more of me) to John Chumley, Esq., Manager of the Standard Bank of South Africa, Limited, 10 Clement's Lane, London, E.C.; Major W. E. Gilbert, Warleigh Lodge, Upper Tulse Hill; or John Heal, Esq., Hertford Lodge, Church End Finchley, London, N.

ROB. GODLONTON.

The undersigned were witnesses of the stroke of forked lightning described in the letter to you, written by Mr. Godlonton, and consider his description accurate in every detail.

CHAS. HONEY (care of F. A. Purdon, Esq., Buluwayo).

OTTO BERTRAM (Standard Bank, Buluwayo).

ROB. GODLONTON (Secretary Matebeleland Printing and Publishing Company, Limited, Buluwayo).

December 2, 1895.

#### Lecture Experiments on the Nodes of a Bell.

I WAS much interested in the communication from Mr. Osborn on the above subject (see NATURE, January 9). For some years I have been in the habit of showing these nodes in the following way. An ordinary glass bell-jar, eight or ten inches high, with a moderately broad, flat, ground edge, is held with the edge upright, and fine sand scattered all over the flat edge. It is comparatively easy to excite the edge with a bow in such a way that the sand will be driven off everywhere except at the four nodes. I have never been able, however, to obtain more than four nodes in this way.

I have also employed a similar method for showing the nodes of a tuning-fork. If the fork is a moderately large one, it is held horizontally in the hand, and the upper prong is covered with sand. By bowing sharply near the middle and near the root of the prongs, two overtones can usually be obtained, the nodes of which are clearly marked by the sand.

Central School, Manchester. R. L. TAYLOR.

#### THE STATUS OF LONDON UNIVERSITY.

PROF. S. P. THOMPSON'S lecture to the Society of Arts on the 15th inst. will greatly assist the scheme for the reform of the University of London. The statistics brought forward by him show how hope-

lessly inadequate the equipment of the present University appears when compared with that of almost any other University in the world. It can hardly be believed that while Strassburg receives State aid to the extent of £44 per annum for each student, the University of London actually *pays the State* ten shillings for each student. As the lecturer remarked, a University which has no professors, no museums, no laboratories for research, whose library is practically unused and unusable, and whose sole function is to examine, cannot be called a *great* University, if, indeed, it be rightly entitled to be called a University at all. Limits of space prevent us from reprinting Prof. Thompson's paper, but we give, on the following page, a table prepared by him to exhibit the material and financial aspects of different Universities. This information, and Lord Reay's remarks upon the paper, should do much to controvert dialectic denunciations, and to show the true position of London University among the Universities of the world.

Prof. Thompson considered in succession the points upon which information is given in the different columns of his tabulated statement. He showed that not only is the educational position of the existing University entirely anomalous, but the financial position is still more extraordinary.

In closing the discussion which followed the reading of Prof. Thompson's paper, the Chairman, Lord Reay, remarked that the statistics which it included could not be too much impressed on the public mind, as an indictment against the country for leaving waste resources unparalleled in the civilised world. He was quite convinced that, if there were in any other country the treasures we had in London, both in the way of museums and libraries, and of men who were prepared to teach, it would not take ten, twelve, or twenty years to bring about the result required; but that whoever was the director of public instruction in that country would at once say to the Minister that it was his duty to lay on the table of the Legislature a Bill for the establishment of a teaching university. Among the many extraordinary symptoms which this controversy had brought to the surface, there was one of a very curious nature. Whenever they read an argument against the creation of such a university they found, either outspoken or in a latent form, this accusation: "Such a scheme will hand us over to the tender mercies of the London teachers." Now to the tender mercies of the teachers higher education was left in all the countries of Europe. He was not yet acquainted with the constitution of the University of Tokio, but he should be much surprised if they found there the slightest jealousy of leaving to the teachers the management of that which they must understand better than others. As a member of the Cowper Commission, he had been agreeably surprised to find that amongst all those on whose opinion the Commission set most store, there had been hardly a dissentient voice. In the case of every former report or scheme, those who would have had to put it in operation, and on whose labours its success depended, were in doubt, not about details, but about some leading feature; but this last scheme had been accepted not only by the teachers in London, but by the staffs of those very provincial schools whose students, they were told, in some questions had not been sufficiently considered. The best answer to the difficulty about external students was that given by Prof. Thompson when he said that learning, not teaching or examining, was the primary essential. That meant that, in a teaching university, the individuality of the teacher should be allowed its full scope, and also that each individual student should be allowed to work for the sake of learning, not for the sake of the examination. There might be as much difference between two internal students as between an internal student and an external, and in the examination the individual character of each student would be allowed for. The external students would not only have the same guarantees of a fair examination as at present, but perhaps even better; but if further guarantees were wanted, by all means let them be given. The great point was that internal students of London should, at least, have that to which they had a right—a teaching university of their own. It was nothing less than a scandal that London, with a greater population than Scotland, or than many of the countries of Europe, which had two or three universities, should not have a university of its own.

With regard to the question of the boundary line, every one who had had any experience in such questions knew that controversy was endless, but that was a matter for the Statutory Commission, and the subjects to be included in the curriculum were also open; but agriculture was expressly included, because it was

found that at most universities the science of agriculture, apart from its practical aspect, was deemed essential. He thought it was not only the duty, but the privilege of any Government of this country to at least give to the metropolis and to the empire a worthy university.

	Gross Income.	State or Municipal Subvention.	No. of Students.	Income per Student.	State, &c., Subvention per Student.	No. of Professors and Assistants.	Total Salaries of Teachers.	Total sum spent on Museums, Laboratories, Observatories, and Institutes per annum.	Total Sum spent on Library per annum.	
	£	£		£	£		£	£	£	£
Paris ... ..	150,000	?	11,233	13	?	300 +	116,000	34,000	4,100	2,700
Berlin ... ..	130,000	105,000	8,652	15	12	179 + 174	34,000	73,000	1,600	950
Vienna ... ..	109,000	104,000	6,714	16	15	159 + 190	25,000	12,600	1,080	930
Oxford { Univ. Colls.	63,761 250,000	—	{ 3,200 (under-grads.)	19 } 77 }	—	70 +	?	12,000	4,762	5,238
Cambridge { Univ. Colls.	65,550 282,000	—	{ 2,900 (under-grads.)	22 } 97 }	—	80 +	?	9,000	4,000	2,040
Harvard ... ..	260,000	—	3,783	69	—	149 + 188	101,000	88,000	4,200	5,000
Leipzig ... ..	90,000	70,000	2,957	34	23	134 + 65	46,000	24,500	2,000	2,500
Edinburgh ... ..	88,142	29,752	2,924	30	10	90 +	48,000	19,000	1,012	1,400
London ... ..	21,000	†	2,225	9	‡	—	—	199	?	100
Cornell ... ..	105,000	7,000	1,686	62	4	77 + 80	54,000	21,300	7,600	
Padua ... ..	26,800	?	1,672	16	?	62 + 60	20,000	4,800	1,000	400
Graz ... ..	19,800	18,600	1,562	13	12	83 + 28	10,000	9,000	2,200	
Upsala ... ..	40,000	9,000	1,495	27	6	122	24,300	8,900	1,200	
Bologna... ..	30,000	?	1,457	20	?	70 + 81	20,000	9,000(?)	680	400
Heidelberg ... ..	38,400	34,500	1,428	27	24	96 + 25	23,000	13,000	?	800
Tokio ... ..	70,000(?)	?	1,396	50(?)	?	123 + 31	25,000(?)	?	?	?
Tübingen ... ..	45,000	43,000	1,262	36	34	69 + 15	20,000	23,000	?	700
Dublin (Trinity College) ... ..	70,000	—	1,124	62	—	35 +	?	?	?	
Strassburg ... ..	50,000	46,000	1,030	48	44	88 + 32	26,000	16,000	2,800	2,950
Greifswald ... ..	39,000	14,000	891	43	17	64 + 22	13,000	19,000	1,000	2,000
Zürich *... ..	30,000	25,000(?)	822	36	30(?)	61 + 56	9,500	3,500	[1,150]	
Leyden ... ..	62,200	?	815	76	?	50 + ?	33,000	4,680	445	780
Königsberg ... ..	49,000	41,000	756	66	55	70 + 32	15,000	25,000	1,300	1,370
Giessen ... ..	38,000	27,000	598	63	45	55 + 8	13,000	22,000	570	900
Baltimore ... ..	35,000	—	589	59	—	42 + 42	?	10,300(?)	?	
Rostock... ..	16,000	15,000	420	38	36	42 + 3	7,900	5,500	400	1,030
St. Andrews ... ..	11,972	6,035	199	60	30	15 + 4	10,000	?	630	

\* This does not include the Polytechnicum, which has an income of £36,000, of which £30,000 is a Subvention from Government, and which has 1,235 Students, and spends £6,500 a year on its Laboratories for Chemistry, Physics, Engineering, &c.  
 † Instead of receiving a Subvention, London University pays to the State £1,102 per annum.  
 ‡ London University pays to the State a sum equivalent to 10s. per student.