

COLONIAL VINEGAR.

TO THE EDITOR.

Sir—A great deal has been said on this subject, mostly by people who know nothing about it. Vinegar is the acetous fermentation of liquids containing a low percentage of alcohol, and is so simple that a great many people could make their own if they liked. There are all kinds of vinegars—aromatic, spiced, table, white and brown, &c., but the quality on which pickles and sauces, &c., depend for keeping, and on which salads depend for taste, is in all cases the amount of acetic acid contained in the vinegar. No one would use vinegar for the sake of the aroma. Brown vinegar has coloring added to suit the taste of the buyers. The proper way to buy or sell vinegar in the trade should be (as is done in some countries) by strength—the same as is done in alcohol—that is, to state the greater or lesser amount of alkali which can be neutralised by a given quantity of vinegar. Vinegar with a 9d. per gallon duty was a complete farce, when acetic acid could come in on a 10 per cent. duty which enabled people to make vinegar at about 7d. per gallon, and our Treasurer certainly acted right when he refused to take the 3d. per pound off acetic acid. The Treasurer showed by his consistency in the tariff that it was a well and seriously considered scheme, that every single item had the additional help of specialists and that the tariff as a whole was not the crude thing a few importers would like it to appear. As most of your readers are aware colonial pickles compare favorably with the English. Whether the flavoring is done with or without malt matters nothing providing they taste well, which certainly is the principal point to be considered. Manufacturers will see that the vinegar they use contains sufficient acetic acid to make them keep. The statement made in Parliament that Messrs. Chance & Co. had to shift part of their plant on account of the vinegar and acid duty, simply means that they never made any vinegar, but I scarcely believe this to be the cause of the statement made in Parliament. I am not interested directly or indirectly in any vinegar, sauce, or pickle manufactory, but am simply a staunch

PROTECTIONIST.

TO THE EDITOR.

Sir—I must take exception to Professor Rennie's dictum in his parliamentary report on vinegar, that a vinegar is better fitted for pickling (a good pickling vinegar) when it contains a great quantity of extractive matter and phosphates, and basing on such dictum his opinion on the different vinegars, as set out in his report. Surely, the learned professor should know what "phosphates" are, and if he does not he can inform himself by putting some of the dry extractive matter from the vinegar examined in a cup of water, dissolving it and allowing it to stand outside his windowsill for a day or two. He will then find that it is alive with vegetable growth, called bacteria. This will enlighten him that this phosphoric extractive matter is a ferment, and surely a ferment can not form an important matter in good vinegar, and make the vinegar necessarily better fit for pickling. It tastes nice and smells nice, there is no doubt about it, but it is not an antiseptic. It is the reverse, and pickles made with vinegar which contain such large quantities as he says (5 to 6 per cent.) without a corresponding very high percentage of acetic acid will very soon be unfit for food. Extractive matter is a decaying matter. It is much to be deplored that the vinegars have not gone into more competent hands to be judged.—I am, &c.,

ACIDUM.

AUSTRALIAN TRADE WITH THE UNITED STATES.

The New York correspondent of the *Birmingham Daily Post* writes:—"There is a good deal of talk about taking measures to extend the trade of the United States with the Australian colonies. What may be done towards this end by legislation will depend upon the action of Congress on the Tariff Bill. The woollen manufacturers who appeared before the Committee of Ways and Means were earnestly opposed to any reduction of the tariff on their class of products, declaring that their business could not survive any meddling with the barriers which now exclude foreign competition. They admitted, however, that the main reason why they could not afford any reduction of the duties on manufactured woollens was that they were compelled to pay a high duty upon the foreign wools used by them which are not to be procured in this country. A reduction of duty on Australian wool would at once be a great advantage to them, and promotive of trade with the colonies, which has declined of late years; but such a concession would be warmly opposed by the wool raisers of the United States. The Queensland authorities, we are told, have voted to purchase 2500 miles of fencing and 450 miles of wire netting of small mesh, as protection against rabbits. A route has been laid out running for a distance of 300 miles to the intersecting angle of Queensland and New South Wales, and thence northward for 100 miles. The Government has voted 25000dol. for the purpose. It is estimated that 1300 miles of fencing will have to be laid in New South Wales; whilst in Victoria so great is the demand for wire, that the authorities have signified a willingness to forego the duty upon it. As the Victorians are warm advocates of protection, this would seem to argue extraordinary urgency. Measures are being taken to supply this colonial demand from Massachusetts and Rhode Island by the barbed-wire manufacturers. Calculating on a drawback on the exported to the amount of duty paid on the imported wire rods from which it was made, it is believed that they can successfully compete in Australia and New Zealand with European wire manufacturers."

THE UNIVERSITY OF SYDNEY.

TO THE EDITOR OF THE DAILY TELEGRAPH.

Sir,—Away from town, I have not been able to reply sooner to the remarks of "Omega" on my previous letter. A dispassionate reader of that letter must see that I never for one moment insinuated that Sir William Manning was not "indefatigable" in his duties as Chancellor. So far from doing this, I express my belief, not only that he has been the most zealous occupant of the position that the University has had, but also that he has entertained the most liberal views. It must, surely, have been "Omega's" aim to draw attention from the real subjects at issue, namely, the anomalies of the University and the need for reform.

When "Omega" says that the University

degrees are not for all he makes a statement that is out of harmony with the spirit of the times and is incompatible with an enlightened mind. I do not know whence he derives the authority for asserting that the University is a "teaching body, not an examining body." He quotes the Royal charter of the institution, but though I have read it I can see nothing even to suggest a ground for his assertion. The charter merely recognises outside the colony the full value of the degrees conferred here.

Few will coincide with "Omega's" remark that the right and only way of knowing what work has been performed by a student is to compel him to attend lectures. If the examinations are not conducted in a testing way, I do not see what purpose they serve. According to this novel view of examinations, a student may be unsuccessful at them, yet may obtain his degree simply because he has attended the prescribed lectures. I have seen some of the recent examination papers, and my opinion is that the questions are of a very searching nature and yet give ample scope for the display of wide reading. I do not hold the notion that all the knowledge in the colony, literary or scientific is to be found at the University. By this I do not underrate the ability of the professors and lecturers, but mean that there are others besides them who are fully competent to prepare students for the different examinations.

It may interest "Omega" and others to know that the Incorporation Act of 1850 declares that that "it is deemed expedient for the better advancement of religion and morality and the promotion of useful knowledge, to hold forth to all classes and denominations of her Majesty's subjects resident in the colony of New South Wales, without any distinction whatsoever, an encouragement for pursuing a regular and liberal course of education." The senate is appointed "for the purpose of ascertaining, by means of examination, the persons who shall acquire proficiency in literature, science and art, and of rewarding them by academical degrees." The University is therefore established to afford encouragement to students, to ascertain their attainments, and to reward them accordingly—not to compel attendance at lectures, but merely to provide them where necessary.

My return to town has enabled me to examine the results of past examinations in order to see how many of the students who matriculated have gone through the university course and obtained a degree. Three years are required for the B.A. degree, and consequently those who matriculated in 1878 could not take their degree before 1881. The following table shows some interesting information; the first column shows the year in which the students matriculated, the fourth column the year in which they obtained the degree:—

Year.	No. of Matriculants.	No. of Degreeemen.	Year.
1878	28	9	1881
1879	58	16	1882
1880	50	20	1883
1881	53	23	1884
1882	74	12	1885
1883	60	20	1886
Total	323	Total	100

This shows that not one-third of the matriculants go through the course. Had I the time I could show, with statistics, that some matriculants fall off in their first year, some in their second year examination and some in their third year examination.

Great was the rejoicing, it seems, and loud were the congratulations at the commemoration in 1884, when the number of matriculants for one year was the greatest ever obtained. Alas! In 1885 only 47 of them appeared in the first year lists, and this year only 27 appeared in the lists for the second year. This year 80 students matriculated; but, judging from experience, we cannot expect more than 25 or 30 at the most to go through the course prescribed.

There must be some reason for all this. It is not satisfactory to the University. It is not satisfactory to the legislators who vote the endowment money. It is not satisfactory to the people of the colony who pay the money in taxes. In fine, it is eminently unsatisfactory to all lovers of culture and a liberal education.

The fact that no bursaries are available show very clearly that the majority of the students in this colony are not to be found amongst the well-to-do. Why, then, does the University not strike out in a liberal direction and offer to "all classes" the "encouragement" mentioned in both its Incorporation Act and Royal Charter? I hear that not a few students choose to go to the Melbourne University because they are absolutely shut out here. That the Sydney University does not receive the patronage it should, is manifest to all. Commercial men have told me that rather than submit to the vagaries of that institution, they prefer sending their sons straight to the counting-house as soon as the latter have finished the course at school. During the last academical year of the Melbourne University, 427 students passed the examination for matriculation; 106 their first year, as against our 36; 78 their second year, as against our 30; 61 their third year, as against our 20; 16 their fourth year, and 13 their fifth year. What an array of figures for the Melbourne University! But the meaning is obvious. The latter institution keeps pace with the times. It is the same with education as with many other pursuits—people care not to be forced into a groove in order to suit the whims of others. They like a fair allowance of choice. A subject that is distasteful ought to be put aside for another that is equally improving and also after one's own liking.

One reform that might with advantage be introduced here, is that of holding a second examination for matriculation in the year. Unsuccessful candidates at one examination might present themselves again in six months' time. This would prevent the growth of apathy, and be an encouragement to a candidate who fails from unforeseen causes such as nervousness or ill-health. Would that "Graduate's" words were not true, and that the graduates of the University took more interest in its proceedings instead of displaying such apathy! It certainly is an unpleasant reflection on them. One of the reforms they should advocate and agitate for until they get is the election of the chancellor and senate annually, just as other bodies elect their president or chairman and committee or directors. When the election depends on good results we may expect satisfaction and the wishes of the majority to be carried out. Nothing is so essential to the progress of an institution as the making it popular, and these proposals of reform which I have ventured to submit would do this.

"Omega's" reasons for limiting the issue of tickets for commemoration is a bad one. The great hall, he says, holds 900 persons. I am told it will accommodate 1000 or 1200. But take his number. The members of the University number about 400. If you allow two tickets to each member you will have 100 to spare. Not all of the members, however, can be in the colony and some live in the country: and the number of tickets to spare must

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be still greater. It is a great pity that the circular enclosed by "X." should ever have been sent to a graduate or undergraduate.

I must certainly apologise for troubling you at such length. Your usual courtesy in allowing matters for reform to be ventilated has led me to write this second letter.—Yours, &c.,
Manly, June 22. J. D.

DEATH OF EDWARD, THE BANFF NATURALIST.

Thomas Edward, the Banff naturalist, who attained a wide fame through the story of his life written by Mr. Smiles, died on April 27 after a prolonged illness. Edward was born on Christmas Day, 1814, at Gosport, Portsmouth where his father, a private in the Fifeshire Militia, was stationed after returning from the Peninsular War. The elder Edward, who was a handloom weaver, subsequently settled in Aberdeen. Early in life Thomas showed indications of a great love of animals, insects and creatures of every description. He made extensive excursions in search of specimens, and many amusing anecdotes are told to illustrate his extreme fondness for even the most repulsive subjects in the animal creation. To his mother he was a source of constant trouble, for she disliked many of the creatures with which the boy constantly came home, in his pockets, in his cap or concealed about his body. On one occasion he took off his shirt to wrap a bee's "byke" in it. Edward was an unmanageable boy, with no love of books. He had been discharged from three schools before he was six years old, partly on account of a habit of playing truant, and partly because he alarmed his fellow scholars by bringing jackdaws, worms and beetles into school with him. Edward was sent to work at a tobacco factory at the age of six, and subsequently to Grandholm Wool Mill. He had there the opportunity to indulge to the full his love of natural objects. At 11 he was apprenticed to a shoemaker, and at the age of 18 he had gone through many severe trials. He joined the militia, but his love of insects proved fatal to his military ambition. When at drill one day a butterfly fluttered past, and Edward, forgetting discipline, brake from the ranks, pursued and captured the insect. He was brought back a prisoner and subsequently discharged. In his 20th year Edward went to work as a shoemaker, at Banff, and then he pursued so successfully his researches in natural history that he added a great deal to the scientific store of knowledge. When he married at 23, his wages were 9s. 6d. a week, and he had to work till late all the year round; but he often spent nights in the fields and caves, searching for insects and strange flowers. For years Edward carried on most of his researches by night, and he had many narrow escapes through the eagerness with which he pursued his object. He completed a splendid collection, and in 1846 exhibited it in Aberdeen. The exhibition was a failure, and he had to sell the collection for 20s. to defray the expenses. He

set to work to form another collection, and was most successful. His researches added greatly to the knowledge of natural history, as he embodied the new facts in papers written to scientific magazines. In 1866 Edward was elected a member of several leading scientific societies. Latterly he has acted as curator of Banff Museum. After the publication of his biography by Mr. Smiles, Edward's genius was publicly recognised by a presentation of £333 made to him in Aberdeen, and he was awarded by the Queen a pension of £50 a year.

RAINFALL AND ELECTRICITY.

TO THE EDITOR OF THE DAILY TELEGRAPH.

Sir,—We hear now and again of the distress in the country caused by want of rain. Much money has been expended by the Government and by private enterprise to conserve water and to procure it by sinking wells. Water when obtained by these means avails comparatively little. It cannot be applied to the growth of grass, though it may to watering live stock. Is it possible to interfere with the course of nature, and by mechanical means induce rain when it would otherwise not rain? I think it is.

Unquestionably, certain physical laws govern rainfalls. Our ignorance of them is no evidence that they do not exist.

Electricity has beyond doubt much to do with rain. This is demonstrated in thunderstorms. And if we examine the phenomena manifested in them, principles will be discovered which may explain the conditions upon which rainfalls depend. Storm clouds are only ordinary clouds surcharged with electricity.

All bodies, whether positively or negatively electrified, repel one another. But if one be positively and the other negatively electrified, they attract each other. Lightning is an immense electric spark, the poles of which are two clouds separated from each other and charged with opposite electricities. Lightning is produced by the recombination or neutralisation of opposite electricities. If one of the poles of the lightning be on the earth the lightning falls to it, and we say the lightning struck the earth. By paying attention to this fact, we can, I think, discover what it is that prevents rain from coming when by reason of a clouded sky we expect it. The earth furnishes one of the electricities, the cloud the other. It may be said: How comes it that the earth, which is usually in a passive state and apparently without electricity, becomes under certain circumstances charged with electricity, and that of the opposite kind to that of the cloud at the exact moment it is struck? It happens thus: Before the lightning falls, the cloud which contains it, notwithstanding its distance from the earth, acts by induction to repel the electricity of a like kind and to attract the opposite kind.

This induction tends to influence more or less all physical bodies, but is only really effectual on good conductors, such as metals, water and moist earth. The same conductor experiences different effects from the cloud according to its form and dimensions, and above all according to the thoroughness of its communication with the earth. The house, tree or whatever object may be struck, is not the pole of the electricity furnished by the earth but merely the conductor; the pole is far away down in the earth, down in a subterranean reservoir. If a tree or other object be on

dry or only moderately damp ground of limited area it is a bad conductor. But if on damp ground of considerable extent, the dampness reaching to the first water-bearing stratum in the earth and not insulated from watercourses and the sea, it then becomes a good conductor, as it communicates with the reservoir from which the electricity is drawn, which is the lightning's pole furnished by the earth.

While the storm cloud exercises its induction everywhere below it, attracting the contrary and repelling the like electricity, the subterranean water-bearing stratum is affected by the induction to a high degree, causing all the upper surface of the earth to be charged with the opposite electricity which the cloud accumulates there, by force of attraction, while the electricity of the same kind is repelled and dispersed at a distance in the common reservoir. When the lightning falls the two poles are, one in the cloud and one in the earth or subterranean stratum. The above is a brief outline of what happens to clouds highly charged with electricity. But what happens to clouds weakly charged with that element? It is well known that rain is the result of water that has been drawn up to the sky by the influence of the sun, and it is fair to assume that the same quantity is drawn up during times of drought as at other times. But what becomes of it? It must fall into the sea. Why does it fall there? There must be something that repels it from the land. I observed, when treating of clouds highly charged with electricity, that when a cloud approached the earth it was necessary that favorable conditions existed to repel into the earth electricity of a like kind to that possessed by itself, and to attract the opposite before a discharge could take place.

So that if the surface of the earth, and the surrounding air, be charged with electricity of the same kind as that of the ordinary or weakly charged clouds, the clouds will be repelled; indeed, if they should come over the earth, unlike the highly-charged clouds, they are not powerful enough to produce, by induction, the conditions necessary to cause the withdrawal of sufficient electricity to induce rain. It is my conviction that there exist subterranean water-bearing strata which communicates with the sea; for when we take into account the quantity of water that falls inland, and deduct that which goes off by evaporation, and what finds its way by rivers to the sea, there is still a large quantity unaccounted for; nor does there appear to be any other explanation of the fact than that it reaches the sea by an underground course. Moreover, additional evidence of this fact is supplied by the success which usually attends the operation of boring for water. Now, I maintain that this subterranean water might be utilised to cause rain at certain times. When the heavens are overspread with clouds that are weakly charged with electricity, they might be made, by induction, to operate on the subterranean reservoir by means of a copper wire conductor extended from it towards the clouds, so that the two poles would be brought into communication with each other. The result of this arrangement would be, that when the clouds approached within a certain distance of the conductor, the electricity with which they are charged would repel the electricity of a like kind and disperse it in the subterranean reservoir, at the same time attracting the opposite electricity, which would combine and neutralise that in the clouds, causing the rain to descend. It may be imagined that a single conductor would not effect a very sensible result.

Let it be recollected, however, that a single match applied to a forest when in a combustible state will destroy it to its utmost extent. I should like to have gone more fully into this question, but your space is limited. Perhaps some of your readers will prosecute it further.

—Yours, &c.,
Granville.

JAMES BERGAN.