

THE BERKELEYAN.

"WESTWARD THE COURSE OF EMPIRE TAKES ITS WAY."

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MAUVAISES TERRES.

[The Mauvaises Terres, situated in Dakota, is a vast tract of depressed soil, sprinkled with fossil remains of genera long extinct; and having pillars of argillaceous earth rising from its surface to the height of several hundred feet. This domain of land is a wonderful phenomenon in the work of Nature, and inspires the spectator with awe and wonder.]

A tomb! An universe of death,
Sepulchral still! 'Twere tho' stern war
On swift triumphal car, had left
A nation slain, some waste amid,
Far from the home of man, to rot
Sepultureless; a meal for fowls
With vulture eyes, and Summer sun
At sultry noon; or t'were as when
Some pestilential breath, wide-blown,
Depopulates a city old,
Nor leaves one human hand to pile
The mournful sod above the dead;
The streets no throb of life disturbs,
The green moss climbs the lonely walls,
And lo! the whitened bones appear,
Deserted by the snarling wolves.

Of sand and clay are reared these spires,
Which far-off seen, the traveler weens
He sees a city grand, and spurs
His wearied beast to gain, alas!
A charnel of the fossil dead.

Around him lie unnumbered bones,
Exhumed by ocean's surge from out
The beetling domes, as thro' this vast
And waste domain of chalky mar',
And death, and fluted column tall,
He seeks in vain for tree or shrub
To cool his heated brow. The rill

Turns bitter on his lips, forth oozed
From circumambient walls that guard
This sunken grave, with alkaloid
Surcharged. Not these the fossil forms
Of man! Let science build from these

White skulls, the strange Oreodon,
And vast Titanotherium
Careering in the clime, where now
The practiced eye of man doth view
Them blotted out from living life,
And chained Prometheus-like
Recording rocks and sands among.

Thou cenotaph for fauna dead
In every land, thou storied vault
For mammals long extinct, world-thoughts
Arise to him whose foot hath strayed
Where Cenozoic twilight traced
In thy carved shafts and sunken sod,
Memorials of his youthful skill,
Which in a later age could build
Divine, mysterious being—man!
How shaped thy clustered minarets,
Inlaid with tusk and sutured skull,
By billowy hands wrought out, or left
By low subsidence of the soil,
Revolves his thoughts, nor find reply,
Save in his own inventive mind.

Doth man the apex crown of life,
Behold him muse, evolved at length
From lowest germ for noble gift
Of intellect and moral zeal;
Or will his mausolean shafts
And catacombs a greater view,
When geologic age on age
Has swept its tidal wave along,
And marvel at his charnel-house,
As now I marvel at this vast
Sepulchral tomb? The chain is done;
The last long link complete. 'Tis man
Will view the wreck of worlds, and hear
His own pale lips of living life
The end proclaim.

TWILIGHT.

Oh! in the shadowed Lonely
A night bird calls,
Once, from the stillness, only;
And in the restless Nameless
The mountain walls
Are stronger ones grown blameless.

Oh! watch each tree's outlining,
And see its soul
In a clear fashion shining,
While all the sapces folded
In cloud control,
To azure gates are moulded!

Oh! hear the palm trees quiver
With yearnings low
Beside the living River;
And hear the crystal motions,
Eternal, slow,
Of God's unmeasured oceans!

Here is a sense of nearness,
In the wide sky;
For all unworled dearness,
And all remembered speeches,
Lie, as shells lie
On the sweet sea's bright reaches.

PHILOMATHESAN.

AGASSIZ AND THE BASIS OF HIS SCIENTIFIC REPUTATION.

BY PROF. JOS. LECONTE.

[Delivered before the Assembly, at the University, Jan. 16, 1874.]

LADIES AND GENTLEMEN: I respond the more willingly to your invitation to say something in honor of Professor Agassiz, because I owe, personally, so deep a debt of gratitude to him as my teacher. For some fifteen months in the years 1850 and 1851, as his private pupil, I spent the whole working hours of nearly every day by his side, either in the laboratory, or else in excursions along the shores of Massachusetts, or over the mountains of New York, or on the reefs and keys of Florida. The result of this long, intimate association was, on my part, a great and ever-increasing love, admiration and reverence for him, both as a scientist and as a man; and on his part, I am sure, a very strong and affectionate regard. It would be very pleasant to me to linger here a moment—to speak of him as a man and a teacher, the contagiousness of his enthusiasm, the abundance and suggestiveness of his thoughts, the greatness of his intellect; far greater, even, than his work, and therefore contrary to what we find in little great men, the increase of his intellectual stature as you approach him nearer and nearer. It would be pleasing to me to linger here, but I have a higher duty to perform, and one which I am sure would be more pleasing to him. I wish to show the true grounds of his great reputation, and the reasons for believing that it will be permanent. I wish to hold up before you the example of a life devoted wholly to pure and noble purposes, and attaining great results.

In the noble army of science—that army so compactly organized for the conquest of darkness and the extension of the empire of light—there are many valiant fighters, but there can be but few leaders. In the construction of the great temple of science—that eternal temple made without hands; the only temple ever erected by man, worthy to be dedicated to the great Author of Nature—there are many busy, eager, joyous workmen, but there can be but few master-builders. Now, I wish to show that in the construction of the temple of science, Agassiz was not only an indefatigable worker in all the lowest details, with chisel and hammer and trowel, in brick and stone and mortar, but also a great master-mason; that in the army of science, he was not only a valiant fighter in the very front rank, but also a great leader. In a word, I wish to show that he was not only an indefatigable, enthusiastic worker in all the lowest details of his chosen science, observing, collecting, arranging, analyzing, classifying, but also a great, philosophic thinker; that his life and work form an epoch in science; that in looking back over the track of time, his gigantic statue will remain for many ages to come a conspicuous land-mark.

As we look back over the history of science we see, at long intervals, certain men who seem to tower far above their fellows. In what consists their greatness? They are men who have introduced great ideas or new methods into science; ideas which extend the domain of human thought, or methods which increase our power over Nature, facilitate the process of discovery, and thus open the way to the conquest of new fields. Such men were Copernicus and Galileo and Kepler and Newton and Herschell in Astronomy; such were Linnæus and Buffon and Cuvier and Agassiz in Organic Science.

Let me illustrate the effect of the introduction of great ideas into science. I will select one example from Astronomy and one from Geology.

Before the time of Copernicus and Galileo, this our earth, was all of space for us. Sun, moon and stars were but little satellites revolving about us at inconsiderable distances. Astronomy was then but the geometry of the heavens, the geometry of the curious lines traced by these wandering fires on the concave board of heaven. But with the first glance through the telescope, the phases of Venus and the satellites of Jupiter revealed the existence of other worlds besides our own. In that moment, the fundamental idea of modern Astronomy, the idea of infinite space filled with worlds like our own, was fully born in the mind of Galileo. In that moment the intellectual vision of man was infinitely extended.

Again, before the time of Buffon and Cuvier, this our human epoch, the history of our race, was all of time for us. Shells and other remains of marine animals had, indeed, been found far in the interior of continents and high up the slopes of mountains, and there had been much speculation as to the origin of these. Some may have thought by means of these to extend the li-

dwelt on. We see it in the amazing impulse given to Biology and its consequent great and ever increasing progress in recent times. I will only very briefly draw your attention to two indirect results: *i. e.*, results which were not in the mind of Agassiz nor aimed at by him.

Agassiz' work and Agassiz' method prepared the whole ground and laid the whole foundation for the modern doctrine of evolution. The idea of the similarity of the three series mentioned above—the natural history, the embryonic and the paleontological—and therefore the light which each sheds on the others, a view so long insisted on by Agassiz, and so tardily and grudgingly accepted by Zoologists, forms the whole scientific basis, and comparison in these three series, the whole scientific method, of the theory of evolution. Evolution is development; evolution of the organic kingdom is development of the organic kingdom through geologic times. No one insisted so long and so strongly on development of the organic kingdom through geologic times as did Agassiz. All that is grandest and most certain in evolution, *viz.*: development from lower to higher, from simple to more complex, from general to special, by a process of successive differentiation, has always been insisted on by Agassiz, and until recently only grudgingly accepted by English Zoologists and Geologists. In this sense, therefore, Agassiz is the great apostle of evolution. It was only the present theories of evolution, or evolution by transmutation, which he rejected. His was an evolution, not by organic forces within, but according to an intelligent plan without—an evolution, not by transmutation of species, but by substitution of one species for another.

In the true spirit of inductive caution, perhaps of excessive caution, he confined himself strictly to the formal laws of evolution—and no man has done so much in establishing these as he—but he regarded the cause of evolution as beyond the domain of Science, and all attempts at a causal theory as being at least premature, if not altogether vain.

Agassiz' work and Agassiz' method have laid the only foundation of a possible scientific sociology. Society also is an organized body, and therefore subject to the laws of organisms. Society, too, passes by evolution from lower to higher, from simpler to more complex, from general to special, by a process of successive differentiation. Society *progresses, develops*. This is the most glorious doctrine of modern times. The phenomena of society, however, are even more complex than those of organisms, and therefore still more in want of a method. But we have already seen that phenomena which are too complex to be analyzed by experiment can only be brought into subjection by the method of comparison. If, then, there shall ever be a scientific sociology, it must be by the use of the same methods which are used in biology; it must be by the comparison of social institutions, governments, civilizations, etc., in all stages of development: It must be by extensive comparison of social phenomena in *three series*: first as exhibited in different races and nations in various stages, as now existing in different places, corresponding to the natural history series; second, as exhibited in various stages of advance of the same nation from barbarism to civilization, corresponding to the embryonic series; third, as exhibited in the slow onward progress of the whole race through rude stone age, polished stone age, bronze age, and iron age, corresponding to the paleontological series. It is by comparisons of this kind that Herbert Spencer is now attempting to lay the foundation of a scientific sociology. I repeat it: If sociology ever becomes a science it will owe much to the genius and the method of Louis Agassiz.

THE PROBLEM OF CLASS FEELING.

In the last issue of the BERKELEYAN, I endeavored to give a few reasons for differing with some of my fellow-students as regards their plans for moderating the intensity of class to society feeling. I did not then have the space for stating all my reasons for differing from "B. True's" view, and for believing that his plan would not succeed. I therefore take this opportunity for stating what I believe to be the true problem, and for giving what seems to me to be the means of at least partially remedying the difficulty.

I do not think that it will be possible to make good feeling exist by using arbitrary measures. Of course, when disturbances occur it is the duty of certain persons to quell them, and this we are not discussing. But quelling outward disturbances can produce no effect upon the causes of bad feeling, and the same may be said of the means which "B. True" would adopt.

To make this assertion evident it will be well to inquire into the causes which have produced the unfortunate extent to which this jealousy has been carried in this and in other institutions. And in the first place, I think that the greatest cause of all this trouble is the fact that, as Colleges are organized in this country, all the differences between the acquirements and habits of the various classes are put forth in the strongest light on each and every occasion of meeting. According to the generally existent arrangements, the classes are kept entirely or almost entirely separate in their recitations and studies. Each member of one of the higher classes sees the next lower class to his own, toiling along in the text books that he sometime since discarded, puzzled with problems that he solved last year, or, which if he did not solve he laid aside to take their places among the troubles of the past, rejoiced at the conquest of fields of knowledge that ought to have been, if they were not, under his power sometime in that remote past, "When we were 'Freshies, or Sophs, or Juniors,'" as the case may be; in short, he has brought to his attention, at every turn, that the lower class-men are a year or more worse off than he is, and is constantly tempted to look down upon them accordingly.

Now, this feeling seems to me to be the prime mover of all that follows. College tradition is but the expression of this tendency, transmitted from class to class, and strengthening for many years. As a further proof, I may add the fact that this jealousy is always, traditionally and actually, the strongest just between those two classes which by the nature of things differ the most in many things, and are most reminded by circumstance of this difference, namely between the Sophomore and Freshman classes.

If this be true, it will follow that it will hardly be possible to obtain any means of altogether getting rid of the difficulty. It will be hard, I think, to find any influence in college life strong enough to counteract the feelings raised by every circumstance of that very life itself. I do not of course wish here to discuss the merits of the system of yearly classes as compared with other actual and possible methods of admitting students and giving instruction in Colleges. But I do say, that so far as I can see, however great or small the advantages of the present system, it brings with it at least this one disadvantage, that class jealousy must follow the separation of classes from each other by the space of a year.

Now, it is apparent from this, I think, that "B. True's" proposed Congress of Class Unions does not in the slightest strike at the root of the difficulty. Of course

it will always be beneficial to cause some common interest to arise among the students, which shall make them forget their other differences and come together; but how this is to be accomplished by making a sort of organization which shall have no special object but to legislate that everybody shall love everybody else, I do not perceive. I never have learned that the way to reconcile enemies, brute or human, is to shut them up together, and it seems to me that such an organization could do nothing else, if it did so much as that.

Differing from "B. True" in this, I agree with him in believing that a common interest should be aroused. This must be done, in my opinion, not by arbitrary or special measures, but by the furthering of everything which the whole body of students will spontaneously take part in, or at least support. The University paper, no longer divided and injured by the jealousies of two parties, seems to me to be an example of the very things which are in this respect most valuable. The more such enterprises are multiplied, the more, to my mind, will be done in this matter, in the right direction, so long as the enterprises referred to are arranged so as not to be rivals.

But after all it seems to me that a final solution of this problem, so far as it can be solved, is not to be obtained as things now are, but that the future alone will see the truly harmonious University or the one at least which shall be without the great discord that now troubles our own and others like it. And my belief is that the result will be accomplished by the diffusion among students of that true spirit of freedom which is so much to be aimed at. I do not mean simply a general acquiescence to the proposition that all have equal rights, but an appreciation of the fact that all of us are where we are, whether in a better or worse condition than our neighbors, simply through the circumstances of the age in which we live and the particular agencies that have been at work upon us, and that, in consequence, there can be nothing in ourselves which gives us a superior right to that of any one else. The one who has seen enough of study and research to know how unlimited in number, and how unreconcilable the opinions of men are on the most common subjects, who knows the difficulties which lie in every direction in the path to truth, who is therefore in the habit of respecting and looking up to those who differ in the greatest degree from each other, and whom he cannot help disagreeing with, often, himself, such a one, who is thus used to overlooking the greatest differences in circumstances or opinion, will find no difficulty in feeling on equal terms with those who are separated from him only by the little barrier which has made two or three years difference between their positions in the institution at which they are fellow students. He who feels how small a part he and his fellow atoms make of the great living, moving whole, Humanity, will appreciate how minute are all the distinctions of position in College when compared with the truly great ends of life, the bettering of the knowledge, or the furthering of the advance of the whole race, a task in which each individual is but as a drop of water, but the aggregate is the vast tidal wave of progress. When all are thus imbued with the spirit of study and of liberality, any strong jealousy of class and clique is impossible. If such a time ever comes, and I believe that there is a tendency in that direction in the present age, and when the majority shall indeed be under the control of this feeling, college friendships will be not less numerous or strong, but college enmities and hatreds will be, at least, greatly decreased.

J. R., '75.