







THE

Literary Record and Journal

OF THE

LINNAEAN ASSOCIATION OF PENNSYLVANIA COLLEGE.

CONDUCTED BY A COMMITTEE OF THE ASSOCIATION.

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VOLUME I.

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NEW YORK  
BOTANICAL  
GARDEN

Gettysburg:

PRINTED BY H. C. NEINSTEDT.

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1844-45.

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1844-45

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[NUMBER 1.

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Of the Linnaean Association of Pennsylvania College.

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One sheet, periodical—Postage, 100 miles 1½ cent, over 100 miles 2½ cents.

NEINSTEDT, PRINTER, GETTYSBURG.



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THE LITERARY

**RECORD AND JOURNAL**

OF THE LINNÆAN ASSOCIATION OF PENNSYLVANIA COLLEGE.

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VOL. I.

NOVEMBER, 1844.

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THE RECORD AND JOURNAL.

THE LINNÆAN ASSOCIATION OF PENNSYLVANIA COLLEGE having determined to establish a Journal with the title which heads this article, and appointed us its editor, it becomes our duty to sketch its proposed character, unfold its objects, and bespeak for it the favor and support of the public whom it proposes to interest, benefit and instruct. THIS PERIODICAL has its origin in the wants and enterprise of the young men united as active members of the Association under whose auspices it appears. The Linnæan Association of Pennsylvania College was organized a few months since under a Constitution, one of the fundamental articles of which is, in effect, that "*its aim shall be to promote among its members a love of nature and an admiration for the works of God, by cultivating the study of the various branches of Natural Science and an acquaintance with animated nature, and by making collections of specimens in these departments, as also in that of Antiquities, natural and artificial curiosities, and the like.*" This, of course, involved the idea and necessity of a Museum, or Cabinets for the preservation and exhibition of the various objects which it was proposed to collect, and, as is usual and natural among young men in Literary Institutions, their monthly meetings were to be enlivened and made profitable by Reports, Discussions and Essays upon the rich and varied objects of their inquiry.

To aid and direct them in their inquiries they naturally looked to those who had more experience and had made greater progress in these pursuits than themselves. They therefore solicited the countenance and counsel of those who had distinguished themselves in these pursuits or were known to be interested in them, and, by electing them as HONORARY MEMBERS invited their co-operation. The response which they received from our scientific men in various parts of the country exceeded their most sanguine expectations. The Professor of Natural History in Pennsylvania College, DR. JOHN G. MORRIS, of Baltimore, Md., gener-

ously consented to act as their PRESIDENT and to do every thing that he could to encourage and assist them. Having already laid the foundations of a Cabinet of Natural History in Pennsylvania College, which the TRUSTEES of that Institution very properly designated by his name, he continued his exertions in the same direction for the Linnæan Association, and by his characteristic energy and liberality, and his extensive acquaintance among men of kindred pursuits, a splendid Museum seemed springing up as if by magic and rapidly filling and ornamenting one of the largest rooms in the College edifice. The active members of the Association, of course, imitated this noble example according to the extent of their ability, and that zealous Missionary of the Lutheran Church in India, the REV. C. F. HEYER, having even before his departure from this country suggested the idea, continues to send by every opportunity the most interesting productions of that quarter of the globe.

At the very commencement of its operations a "COMMITTEE OF PUBLICATION" had been appointed for the purpose of giving to the press those communications addressed to the Association, which might seem worthy of public notice. But, in addition to this, it soon became evident to the zealous and studious members of the Association, that they were greatly in want of fundamental and elementary instruction in the various departments of Natural Science, to which they were devoted, and the fact of their having so many men of high scientific and literary attainments connected with them, suggested the idea that they might obtain from *them* precisely what they needed. It was with this object that the publication of our periodical was undertaken, and having ascertained that the number of subscribers necessary to sustain it could be obtained, they committed its management to the "*Publishing Committee*," consisting of one of the Professors of Pennsylvania College, a Professor in the Medical Department located in Philadelphia, the Principal of a Select Mathematical and Classical School in Gettysburg, and two Graduates of Pennsylvania College, who have distinguished themselves by their zeal and energy in this matter. The Chairman of this committee having already had some experience as an Editor, they requested him to act in that capacity, leaving the arrangement of the materials to his discretion.

As the title of our Magazine implies, it is to be a *literary* as well as a *scientific and practical Journal of Natural Science*. The reason for this is obvious. General literature has an interest for all the persons whom we expect to reach, but especially for students in our Colleges and higher schools of education, who, we expect, will make up the great body of our readers. It shall be our object to make this department of as varied a character as our limits, abilities and means admit.

But *its scientific character* is that by which we desire our periodical to be distinguished. We expect able correspondents to unfold the principles and make contributions to the advancement of Natural Science in all its various departments. We have already enlisted in our interest gentlemen perfectly familiar with Chemistry, Geology, Mineralogy, Botany, Zoology, Ornithology, Entomology, and the various connected arts and sciences, and we have a reasonable assurance that they will make our paper the medium of their communication with those for whom they write. And from the character of these gentlemen and their knowledge of the design of our Magazine we expect them to give us not merely the very best and latest views of the subjects which they present, but likewise to do this in the clearest and most popular manner. Our present limits do not admit of very long articles, and we are not, therefore, afraid that our correspondents will become prolix whilst they avoid being superficial. And if we fulfil the expectations which we hereby excite, we hope that our Magazine will soon meet with such encouragement as to justify the Association in considerably enlarging the amount of matter contained in it.

Once more, we hope that what we have said of the literary and scientific character which we propose giving our publication, will not prevent intelligent readers, or those who desire to become intelligent, but make no claims to literature or science, from taking and perusing our periodical. As we have intimated above, we desire to give our Journal a popular cast and equally intend it for the pleasure and profit of such persons. We hope to point out the importance of Natural Science to our farmers and mechanics, to interest and give new pleasures and profitable pursuits to the young in their hours of relaxation as well as assistance in the prosecution of their studies and the performance of their duties. We also expect to present useful suggestions as well to the townsman who cultivates his eighth of an acre of garden as to the farmer who drives his plow over a hundred.

With these hints as to the plan and prospects of our work we submit it to the indulgence of a liberal and enlightened public, commending it especially to the care of our literary and scientific friends, who, we hope, will co-operate with us in making it a useful and respectable Journal of the kind which it professes to be.

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#### COLLECTIONS OF NATURAL HISTORY IN COLLEGES.

Most of the collegiate institutions of our country which enjoy any celebrity, are well furnished with philosophical apparatus and libraries,

but very few can as yet exhibit a well ordered or extensive cabinet of general Natural History. Several have very large, magnificent and valuable collections of minerals, but we do not know one which expends money or feels deeply concerned in establishing zoological museums. No wonder that natural history is not considered as a necessary or even useful branch of education, and that in very few institutions provision is made for full courses of lectures on the subject. This I regard as a defect, and think it should be remedied as soon as possible. We however, in this country should not complain, for even as late as 1841, there was no professor of Zoology in the ancient and munificently endowed University of Oxford. Botany and Geology have been long taught in our colleges, and I see no reason why Zoology should be so almost universally neglected. The public mind needs to be awakened to the advantages and pleasures of the study of natural history in general, but this cannot be done, until our youth are properly taught the science in our schools and colleges. On the continent of Europe where the science of education is better understood than in any other section of the world, natural history is taught in most of the schools, and a cabinet scientifically arranged is very properly regarded as an essential part of the *materiel* of the institution. Dr. Bache who inspected 278 Schools in England, Scotland, Ireland, France, Belgium, Holland, Switzerland, and the principal States of Germany, says "that in the great majority of the continental schools, Natural History forms a regular part of the course of instruction and usually occupies from two to four hours in the week." No wonder that youth trained in such schools acquire a fondness for this most delightful pursuit, and become capable of writing valuable works on the subject, and developing the mysteries of nature—no wonder that such a people purchase books on natural history and thus encourage the laborious student, and the fearless explorer of nature in unpropitious climates.

I am well aware that most of our institutions are too poor to support a Zoological professor or to spend money in the purchase of a collection. But perhaps it would not be over-burdening one of the professors of other branches to direct him to qualify himself for giving instruction in this department at least twice a week, and as to the collection, has not every institution friends enough who would cheerfully contribute various objects so that at least, a nucleus of a cabinet might be formed? Not a few of the students and some of the professors or trustees have sea-faring friends whose interest might be enlisted to bring home from foreign countries many articles of value and beauty. I know one college which has a very respectable cabinet which has been altogether contributed by

commanders and officers of ships sailing to foreign ports. But it is not foreign products that are most desirable—our own natural history especially should be cultivated by us—our own quadrupeds, birds, reptiles, fishes, insects, shells, &c., &c., should be collected with zeal and maturely studied.

I hope that the interest awakened in this pursuit in Pennsylvania College will not speedily languish. A respectable beginning in the formation of a cabinet has been made and large and valuable additions may shortly be expected. The establishment of the LINNEAN SOCIETY augurs well for the promotion of natural history in the College. It is the first association of the kind ever established in any college in this country which undertook to publish a Journal of Natural History. It is a most commendable enterprise and reflects unspeakable credit on the young gentlemen themselves and the institution with which they are connected.

It is hoped the members will continue to be industrious in the collection of objects among their friends at home, and lay every person under contribution who has any thing curious in nature or art.

It would be an interesting and useful pursuit for the members to collect all the objects of natural history afforded by Adams County, or as naturalists call it, to collect a *Fauna* of that geographical section. This could be done with a little perseverance and it would be a most healthy employment. Some of the members are already not unskilled in taxidermy, and others I happen to know, are dexterous in capturing zoological prey. Let the shells and fishes of Marsh Creek and the mountain streams be collected before winter—let the reptiles be taken before they enter on their hybernating torpor—let the insects be captured before they perish or seek their retreats from the cold—let the birds be shot before they all migrate to more genial climes—let the quadrupeds be caught at all seasons—and in a short time an interesting collection of the Natural History of Adams will have been secured. When it is once known that such an enterprise is in progress, many objects will be sent to the Association by gentlemen in the country, or by amateur sportsmen, who will take pleasure in contributing to the cabinet. J. G. M.

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#### CHINESE MAGNETIC CHARIOT.

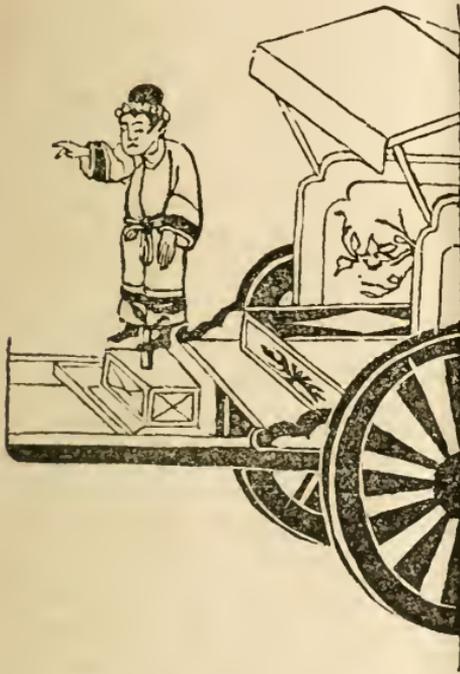
BY PROF. E. FOREMAN, OF BALTIMORE.

The directive property of the magnet was first noticed in a mineral substance called the *native magnet* or the *loadstone*, which is an ore of iron consisting chiefly of the two oxides of that metal, together with a

small portion of Silex and Alumina. It is usually of a dark grey hue and metallic lustre, and is found distributed generally over all the countries of the globe. Its name is said to be derived from that of a province, where it was first noticed by the ancient Greeks, in Asia Minor, termed Magnesia. To the honor of discovering the very useful and peculiar property of this mineral, many nations have preferred claims, which were all in their turn allowed to be superior, until some new fact in magnetic history set up a new claimant. England, Italy, France, Norway, Arabia and China have asserted their right at different periods of time, but setting aside all others the honor was awarded, till within a few years, to Italy, and most treatises on the subject were content with stating that the first person to whom the magnet was known, and by whom it was used to direct the course of a vessel, was Flavio Gioia of Amalfi, Naples, and the date given for the discovery is 1302. More lately the Chinese and Norwegians have set aside the claim of Gioia and offered evidence to shew that the honor belongs to the children of their soil. As our limits will not allow us to discuss the facts in this case, we will briefly state that it is generally understood that these two nations are independent discoverers of the same fact, though, the Norwegians are long posterior to the Chinese in the recorded fact of the use of the Magnet. Among the northern nations of Europe it is known as *Leiterstein* or leading stone; with the Chinese the common name is *Thsu-chy*, the love stone. The latter people have other names by which it is known which are indicative of its properties, as *Tchu-chy* the directing stone, and *Hy-thy-chy* the stone which snatches up Iron.

Since the Chinese are now usually considered the rightful discoverers of the magnet it will not be amiss to state how their claims were first made rightfully evident to Europeans. This has been accomplished by M. Klaproth, a very eminent oriental scholar and chemist. Having fully investigated the subject, being one of the few Europeans who could do it, by means of his extensive acquaintance with oriental languages, he published the result of his researches in 1835 in an essay entitled "*Lettre a M. Le Baron A. Humboldt, sur l'invention de la Boussole.*" (A letter to Baron Humboldt concerning the invention of the compass.) Among other works cited by M. Klaproth is a Chinese Natural History bearing a date equivalent to 1117 of our era in which not only the polarity of the needle is described, but also its declination. This latter property it will be remembered, was re-discovered by Columbus in 1492. The Chinese author states "that when a steel point is touched with a loadstone it acquires the property of pointing to the south" (a point of the compass which is considered by the Chinese as their *Kibleh* or sacred

aspect) “nevertheless it points a little towards the east and does not point due south, therefore mariners take a thread of raw cotton which they attach to the needle by a bit of wax, of the size of a grain of mustard seed, and suspend it in a place where there is no wind. Then the needle points constantly to the south; if the needle be placed in a slender reed it still points southward with a declination towards the east.” The amount of declination did not exceed four degrees, which is too nice an observation to be made with a newly discovered instrument, the inference is accordingly, that they must have known and used it for a long time.



A still more remarkable proof of the claims of the Chinese to the honor of discovery is found in the history of the magnetic chariot, the accompanying figure of which is copied from the 33rd volume of the great Japanese Encyclopedia. The figure is made of a light material, fixed on a pivot, and its finger in which the magnet was inserted invariably pointed South. It was used to direct the march of armies, the route of ambassadors, religious processions, and other ceremonies in which the priests established the proper point of the heavens where the Kibleh was located. The following extract from the Chinese work of GAUBIL mentions one of its supposed inventors.

“The celebrated *Tcheon-Kong* is considered as the inventor of the Compass. It is said that the wisdom of his administration, under *Tching-Vang*, having become known to all nations, a king of a southern country sent ambassadors to *Tching-Vang* to make his submission and pay his tribute. *Tcheon-Kong* had a car constructed, upon which was placed a human figure, the right hand of which always pointed to the South. This car was destined to take the ambassadors back to their country; it was called *Tchi non tche*, that is to say, a car indicating the South; and this is the name which the Chinese now give to the compass.

## SUGGESTION OF A DISTINCTIVE NAME FOR THE UNITED STATES.

BY PROF. S. S. HALDEMAN, MARIETTA, PA.

The fact that our country is without a distinctive appellation has been discussed from time to time, though not with sufficient earnestness to induce the "*American*" Congress to act upon it. Yet ours is not the only country without a name, the British Islands being in the same predicament; and if we cannot appropriate the name "*American*" to ourselves alone, the native of the Island of Jersey is nothing more than a Jerseyman, although a Scotsman may be a Briton. The impropriety of giving us an exclusive right to the term "*American*" is so evident, that that of "*Anglo-American*" is frequently substituted. This however is even more erroneous, as it must include the Americans of French descent in Louisiana and Canada, those of the Dutch in New York, and the German population (amounting to about one-third of the whole) of Pennsylvania and Ohio.

This country is sometimes called COLUMBIA, a name which has become inapplicable since its adoption by one of the South American republics. *Fredonia*, which is supposed to be derived from *freedom*, has its advocates, but the choice of it would justly subject the country to ridicule, as the word is a hybrid. Its true form, according to the sense, is *Liberia*, but this is also inadmissible.

If a name could be selected which would have a definite meaning, and could be readily adopted by foreign nations, it would answer better than any local or Indian appellation, and such a one, connected with classical associations, would be at once appreciated at home and abroad.

In a geographical point of view Asia is always considered as lying towards the *east*, and America in the *west*; and the ancients believed in the existence of a country west of the Atlantic, this ocean being named from Atlas the brother of Hesper or Hesperus, the father of the Hesperides. The evening star was called Hesperus as appearing in the west, and the Atlantic was sometimes called the Hesperian sea. Hesperus had a daughter named Hesperia, married to Atlas, and their daughters were the Hesperides, whose country was in the extreme west towards sunset, whence they were also called the daughters of Nox.

The Greeks sometimes called Italy *Hesperia*, and the Romans gave the same name to Spain or Hispania, on account of the *western* position of these countries respectively. Now the United States lie directly west of the civilized nations of antiquity, and are consequently pre-eminently entitled to the classic name HESPERIA; a name not now in use for any country, and if it be thought to apply to the whole continent, it cannot be inappropriate when restricted to the oldest and most influential of the

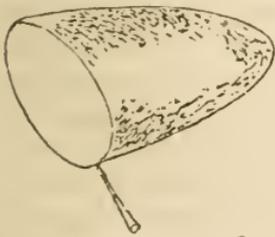
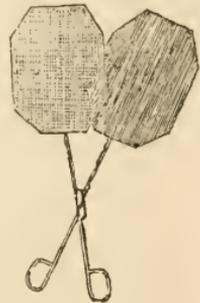
American republics. Hesperus, the god of the West, acts a part in Barlow's poem the Columbiad, and *hesperian* has a place in English dictionaries with the definition—"Situating at the west; an inhabitant of a western country."

#### CAPTURING, KILLING AND PRESERVING INSECTS.

Frequent inquiries have been made of me as to the best mode of collecting, killing and preserving insects, and I have thought it well to give a few directions on the subject in the Record and Journal.

Beetles, that is, hard shelled insects (*Coleoptera*, in scientific language) should be put in small bottles, various sizes of which, the collector should have with him. The bottles should have a piece of wrapped paper in them to which the insects may cling, and to prevent them jostling too rudely against each other, and thus breaking off their legs and antennae. In each vial there should be dropped a little ether, which in a short time stupefies or kills the beetles. The vials should be tightly corked, so as to prevent their liability of coming out in the pocket. This will answer for the larger beetles, but for smaller species, the vial should have a quill passing through the cork, and going a considerable way below it, and through this quill the insects must be dropped. It, of course, must be closed by a small stopper.

For capturing butterflies, different instruments must be employed. First, the forceps with handles like those of scissors, with holes for the finger and thumb and two circular or octagonal frames of iron or strong wood, on which bobbinet is stretched and sewed to the frame. This instrument is used also for taking flies (*Diptera*) and wasps, bees, &c., (*Hymenoptera*.) It may also be employed for catching dragon-flies (*Neuroptera*.) As soon as insects of these orders are taken by the forceps, a pin must be stuck through the thorax before the forceps are opened. The insects are then taken out, and pinned in the inside of your hat until you get home.



Another instrument for taking butterflies is a net, made of gauze or bobbinet and attached to a stick four or five feet long. The net itself should be 16 inches in diameter at the top and about 24 long. This is preferred by some and many species are so wild that they cannot be got to close enough to be taken by

the forceps. When they are taken in this net, it must be instantly grasped above the butterfly (which is usually at the bottom) to prevent its escape. The insect may be pressed between the thumb and finger under the breast, before it is pinned.

Another instrument is the water net, made like the preceding, or indeed, the preceding may answer the same purpose, but it is best to have two. With it, all water insects are captured; the water strains off through the net and the insects remain at the bottom.

A lighter net of similar form, made of linen is used for sweeping the grass, on which immense numbers of minute insects are always to be found; the weeds on the banks of rivers are exceedingly productive of insects, which can be taken only in this manner. In walking through meadows it will be found a good plan to hold this net in such a position that it may continually strike the projecting blades of grass. The bag should be examined every few rods by gently turning it inside out; have your vial in one hand and scoop into it every insect you desire to keep.

Insects are also found on flowers, under stones, bark, logs; in the carcasses of dead animals, in living or putrefying Fungi; in all kinds of dung and rubbish; in sand and gravel pits; in moss; in mud; in water, and frequently flying in the air.

*How to kill insects.*—As soon as you get home, take out your vials containing the beetles, and immerse vial and all (without removing the insects) into hot water. They will be dead almost instantly. Then empty them on a newspaper and if you have time or are not too tired, stick your pins through the right wing cover (*elytron*) near the shoulder. Let those you intend for your collection, dry off well before you put them in the drawers, but the duplicates may be put away in your boxes at once.

Butterflies must be treated differently. I have found a solution of oxalic acid the best and most expeditious means of killing them. Dissolve a little of the acid in water—cut a quill into the form of a tooth pick—take hold of the butterfly so as to bring the wings together between the thumb and finger of your left hand—dip the pen into the acid and insert it in the breast of the insect inclining it towards the head and it will instantly die. Sometimes this must be repeated, but if dexterously done, one insertion will suffice. The insect must then be stretched on a board with a groove in it wide and deep enough to receive the body and the pin—the wings must be expanded—strips of paper pinned over them to keep them thus expanded until they are dried, which will require a few days, and then they should be put in the cabinet. A better instrument than the pen is a glass tube of extremely narrow diameter

with one end drawn to a very fine point. Plunge this into the solution—a portion of it will rise into the tube by capillary attraction—then insert it into the breast of the insect and blow into the other end, and your butterfly is dead. Other soft insects may be treated in the same way.

*How to preserve insects.*—All collections are subject to the depredations of other little insects (*Dermestidae*, *Anthrenidae*, &c.) Their presence may be detected by a little pile of fine dust on the bottom of the box just below the insect they have attacked. This insect must be immediately taken out and immersed into hot water or strong alcohol, if a beetle, and the deprecator will be destroyed. If a butterfly, alcohol may be dropped into the hole which has been bored into its body, or the villainous thief may be shaken out. Some recommend pieces of camphor in the boxes and turpentine dropped on cotton, but if you keep your insects in closely fitting boxes and examine them once a week or so, you can keep your collection clean. Put no insects in your cabinet received from correspondents, until you are sure that they are not infested with these little pests; or you may introduce a swarm of ravagers which it will require months to get rid of.

I shall resume this subject in the next number.

J. G. M.

## FACTS IN METEOROLOGY.

BY PROF. JACOBS, OF PENNSYLVANIA COLLEGE.

1. *What is Meteorology?* It is that branch of Natural Philosophy, which takes notice of all the changes which occur in the atmosphere. From an extensive collection of facts, it endeavors to derive the laws which govern these changes.

2. *Are the atmospheric changes governed by any fixed laws?* Just as much so as any other material phenomena. The Earth has its laws of rotation and annual revolution round the Sun, the Planets have theirs, and the Moon, though apparently very irregular in its motions, has hers; so also have storms, and clouds, and rains, and sun-shine theirs. The phases of the Moon, and the prominent facts relative to her monthly revolution round the Earth have long been known by the mass of mankind; and the knowledge of these has always been turned to profitable account. The most prominent facts also concerning the changes in the atmosphere, such as the changes attendant upon Summer and Winter, Spring and Autumn, have always been known, and men have sought to accommodate themselves to them. But the minor movements in the lunar revolutions, which at first appeared irregular and lawless, have

all by patient observation, been ascertained and reduced to their respective laws, and have proved of the highest advantage to mankind. The same may be expected in reference to those atmospheric changes, which have hitherto appeared, to many, so far beyond the reach of human investigation. We must first ascertain the facts, and then endeavor to deduce the laws. This is our present object.

3. *But even if we can ascertain the laws of the weather, will it be of any advantage to us to know them?* In the first place, the possession of such knowledge will be of as much importance to us, as that of any other species, viz. its own intrinsic interest. In the second place, it is important, because it may be turned to the best practical account. It concerns our comfort and the business of every day life. We esteem as valuable a knowledge of every thing which concerns the nature of the different kinds of soil, the best manner of cultivating and rendering it productive, and the times of depositing in it the seed, because we derive from it our bread, and most of the comforts of life. But in calling forth this very productiveness of the soil, the atmosphere plays a most important part. Besides this, as it is the element in which we live, the health and comfort of our bodies, and our business arrangements are materially affected by the various conditions of the atmosphere. Surely then a knowledge of its laws cannot be useless.

4. Would it then be considered as any thing remarkable, if, upon close observation it should appear, that, if on some particular day of the week it should be cloudy and perhaps there should be rain or snow, the same kind of weather should occur in the next week on the same day, only a little later in the day, and so on in the next, from month to month; the day gradually changing to the next succeeding, and that to the next, &c.? In reply, it may be said that it is somewhat remarkable that the existence of such a fact, though not entirely unknown, should have so generally escaped attention. It has often been remarked as something singular, that three or four successive Sundays, or Wednesdays, or Fridays, for example, should be cloudy, or rainy days; but it is equally singular that the frequent occurrence of such facts did not suggest the inquiry whether these might not be only particular cases belonging to a great law of atmospheric change. To make this appear probable, let us take some examples. And here it is important to remark that the law, which if it exist at all, must be general, is subject to more *apparent* exceptions during Summer than Autumn, Winter or Spring. The examples, as being of a more decided character, will be selected from Autumn, for such will be more easily appreciated by those whose acquaintance with Meteorology is but limited.

On Wednesday the 18th ult., there was rain at Gettysburg, as also on the next Wednesday the 25th, when it continued far into the night. During the following week the rain occurred on Thursday *late* in the day; during the next week on Friday *early* in the morning; and during the week following that, on Thursday and Friday, but extending later into Friday than in the week previous.

Again; on Saturday *evening* the 21st of September ultimo, it rained; then again on Saturday and Sunday the 28th and 29th, the rain extending over Sunday until near night. During the next Saturday in the evening, Sunday, and early on Monday, the 5th, 6th, and 7th inst., the sky was more or less overcast with clouds without any rain; on Monday the 14th inst., the rain began at 6½ o'clock A. M.; and on Monday the 21st at 7 P. M.

These examples have been given, not because they are at all peculiar or the most remarkable that could have been given, for the same regularity of succession can be perceived throughout the whole year, but because they were recent and just at hand.

5. We are therefore, if these things be facts, justified in inferring, (1) that changes of weather corresponding to each other occur at intervals of about seven days and a half; the day of change in each month being about two days later in the week, than in the preceding month; (2) that there are generally *two* such corresponding changes in each week. What has been said in reference to cloud, rain or snow, is true also in reference to fair weather. Knowing then the state of the weather, especially the time of change in one week, we may form a tolerably correct conjecture with regard to that of the next two succeeding weeks. Thus if it have been *rainy* or *clear* on some particular day as Wednesday of one week, there is a strong probability that it will be *rainy* or *clear*, as the case may have been, the next Wednesday, allowance being always made for its occurrence from nine to twelve hours later than in the preceding week.

An account of some other facts connected with this subject, and an inquiry into the question how far the *Moon* may have an agency in producing these alternations of weather must be deferred to another time.

*Gettysburg, October 22nd, 1844.*

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#### STEEDMAN'S WANDERINGS AND ADVENTURES.

"*Wanderings and Adventures in the Interior of Southern Africa.* BY ANDREW STEEDMAN." 2 vols. London.

This work is the result of the travels of the author, during the years 1830 and 1831, and abounds in interesting and instructive incidents. It

can not be compared with Moffat's work on the same subject, either in the extent, or minuteness of its detail. Neither does it enter so deeply into the character and habits of the numerous tribes of Cafirs and Hottentots which wander over South Africa. Moffat resided in the midst of the people, as a Missionary, for twenty years, and therefore was qualified in the highest degree, to exhibit every thing of interest relating to them. Steedman, as the title of his work indicates, was a wanderer, a naturalist, in pursuit of new specimens of the productions of Nature to add to the collections already formed. Keeping in view the grand object of his wanderings, and succeeding in an eminent degree in adding to our stock of knowledge in natural history, he has in addition confirmed the statements of other travellers, and added his testimony to the great value of the missionary effort among the benighted and debased Cafirs. As a specimen of his style, and at the same time to make known a new animal, one of which Mr. Steedman succeeded in obtaining, we will transcribe his notice of the "*Cynictis Steedmanii*." "This singular little quadruped, hitherto unknown to Zoologists, was recently described at the Zoological Society, under the name of *Cynictis Steedmanii*. It belongs to the family of *Viverra*; but in its zoological character differs so essentially from all described species of that family, and presents characters so peculiar and appropriate, as to form the type of a new and distinct genus, of which at present it is the only known species. The teeth are similar to those of civets, paradoxures and other viverra in general, but the feet are completely digitigrade, the heel highly elevated, and the toes five on the fore, and only four on the hind feet, characters in which it differs essentially from all these animals and which approximates it more nearly to the dogs and foxes. The generic name *Cynictis*, from two Greek words, *Κυν*, a dog or fox, and *ικτις*, a weasel or ferret, is intended to express this combination of characters, signifying an animal intermediate between a dog or fox and a ferret. It is found in the eastern parts of the colony of the Cape of Good Hope, and in Caffraria; burrows in the earth, and lives upon small animals."

Mr. Steedman endeavours to maintain the position that the Gems-bok (*Antelope Oryx*, Pallas.) is the Unicorn of antiquity. This position seems to have been admitted by all the naturalists who have investigated the origin of the fabulous Unicorn. The *Oryx* is somewhat larger than an Ass, with cloven hoofs, very long straight horns, a short erect mane of which the hair is reversed, a light sandy-brown color, often approaching to pale-grey with shining black marks on the cheeks and face, and a black switch tail. Now this union of the Horse and Goat presents to us precisely the characteristics of the Unicorn as given by both ancient and

modern writers and painters, with the exception of the position of the horn. The change then, from the two to the one horn, might easily be made, in representations of the animal. It is stated that the first idea of the Unicorn arose from the representation of an Oryx, drawn in profile on the monuments of ancient Persia and Egypt, and that the sculptors of the figures, being ignorant of perspective, could represent only a single horn in their profile. These figures, being afterwards described, gave origin to the Unicorn. In addition to this, the Oryx is a most dangerous animal to attack. He defends himself with great resolution, and with such success, that the Lion dreads the encounter, and when irresistibly compelled to the attack, his life often pays the forfeit, for not unfrequently both combatants have been found dead together from mutual wounds.

H. L. B.

---

A LETTER TO THE EDITORS.

MESSRS. EDITORS,

I have been informed that the Students of Pennsylvania College have lately turned out *en masse* and constructed a substantial road from the college edifice to the village of Gettysburg, about one eighth of a mile in length. I like to see young men "mend their ways," and this enterprise certainly shows that they are for reform. It is said that the *road* to science is rugged, and I remember well when it was true in regard to science taught in Pennsylvania College, especially to those prosecutors of it who boarded in town, for a more stony, rough, shin-breaking path could not well be conceived, particularly of a dark night. But now from all accounts there is a *royal* road leading to Minerva's Temple, and may it be daily trodden by hundreds of ambitious youth.

Every thing outside as well as inside of a college should be rendered attractive and inviting. The avenues leading to it should be unencumbered and solid; the walks around it should be tasteful and elegant; there should be bowers and groves; gardens and flowers; summer houses and rustic seats; a rural aspect should be given to the whole *campus* and surrounding grounds. To effect something like this should be the next effort of the Students, who have already given such *substantial* evidence of their engineering skill. Let them establish a tree planting association, and they will confer a favor on posterity. *Non nobis solum*, should be their motto. It is said that he who makes a blade of grass grow where none grew before is a benefactor of his race, and surely he who plants a tree where none grew before, is entitled to the same distinction. I know that efforts have been made to ruralise that *campus*, but we should not despair. Look at the dwelling house a little to the east of the Col-

lege and see how luxuriantly the trees thrive there. Look at the Seminary and see how embowered it is in most refreshing foliage.

I love to see a college environed with shade trees—it is so *academic*. A grove seems almost essential to a literary institution. It is classic and should be cultivated with unceasing diligence. It is this that renders the Romish Schools so attractive to pupils—there is so much sylvan elegance about them—so many shady walks—so many inviting rural retreats in the hours of relaxation. All these appendages to an institution render a residence there charming—a strong attachment for the place is excited—the taste is refined, and many temptations to grosser pursuits are prevented.

“The warbling woodland,  
The pomp of groves and garniture of fields,”

always have a subduing tendency and their influences should be thrown around every school of learning. I know that Pennsylvania College is still in its infancy and it cannot be expected that much attention could be paid to beautifying the grounds in the vicinity. I know it will require years to accomplish it, but let a beginning be made and the effort persevered in. I am of opinion that the Linnæan Society should take this department under its special care. Linné was a distinguished botanist and arboriculturist, and in honor of the illustrious name which the Society has assumed, let its efforts be directed to this object. If the laudable exertions heretofore put forth have partly failed, it should not deter the Society from renewing them until they have that *Campus* in the front and rear of the College well planted with healthy and flourishing shade trees.

The road which has been constructed by the Students should be appropriately designated. There is at Rome a *via Appia*, in Switzerland a *via Mala*, in Jerusalem a *via Dolorosa*, and our road should henceforth and forever be called the *via Benedicta*, in honor of MR. BENEDICT, the energetic young gentleman, who, I am told, was the principal projector, superintendent and workman in its construction. It is an appropriate name, for it is a *blessed* or *happy* road, and I am sure the benediction of heaven will rest on the exertions of the Students who so nobly volunteered their personal aid in its construction. Yours respectfully,

RUSTICS.

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TO CORRESPONDENTS AND CONTRIBUTORS. Gentlemen favoring us with Communications, will please forward them at the latest, by the middle of the month preceding that in which they wish them to appear. We feel greatly indebted to those whose kindness has enabled us to make this number, as we hope the whole work will be, *entirely original*.



# Pennsylvania College, Gettysburg, Pa.

## FACULTY AND INSTRUCTORS.

- Rev. C. P. KRAUTH, D. D.—*Pres't and Prof. of Ev. of Christ., Moral Science, &c.*  
Rev. H. L. BAUGHER, A. M.—*Prof. of Greek Language, Rhetoric, &c.*  
Rev. M. JACOBS, A. M.—*Prof. of Mathematics, Chemistry, &c.*  
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M. L. STOEVEK, A. M.—*Prof. of History and Principal of Preparatory Department.*  
Rev. CHAS. A. HAY, A. M.—*Prof. of German Language and Literature.*  
DAVID GILBERT, M. D.—*Lecturer on Anatomy and Physiology.*  
Rev. J. G. MORRIS, D. D.—*Lecturer on Zoology.*  
WM. ALBAUGH, A. M.—*Tutor and Teacher in Preparatory Department.*  
MR. H. R. GEIGER.—*Teacher of Writing.*

PENNSYLVANIA COLLEGE has now been chartered about fourteen years. During this time its progress has been such as to gratify the most sanguine expectations of its friends. The course of studies is as extensive and substantial as that of any Institution in the Country. The *Preparatory Department* provides for instruction in all the branches of a thorough English, business education, in addition to the elements of the Mathematics and Classical Literature. The *College Course* is arranged in the four classes usual in the Institutions of this country.

The government of the students is as energetic as their circumstances seem to require. They attend at least two recitations a day, Church and Bible Class on the Sabbath, and are visited in their rooms so frequently as to preclude the danger of any great irregularities. It is believed no Institution in the United States has more exemplary young men in connexion with it. They are all required to lodge in the College Edifice, special cases excepted.

The annual expenses are—for board, tuition and room-rent, during the winter session, \$61 87½; for the summer session, \$41 87½. Washing, \$10 00; and Wood, \$3 00. Total expense, \$116 75.

There are two vacations in the year, commencing on the third Thursdays of April and September, and each of five weeks continuance.

The winter session commenced on the 24th inst., with the accession of about twenty Students in the Freshman Class, admitted at the close of the summer session, and a respectable number of applicants for admission into the Preparatory Department.

## ACKNOWLEDGEMENTS.

It is our intention to acknowledge upon our JOURNAL, the various articles that may from time to time be presented to the LINNÆAN ASSOCIATION. The CURATORS not having been informed of our intention in due season cannot furnish us with a list of what has heretofore been received, in time for this No., but we hope to have a pretty complete one for our next. We therefore give only those most recently received, hoping that the liberality of our friends will enable us to make a large monthly report of this kind.

Received from Rev. C. F. HEYER, *Lutheran Missionary at Guntoor in the Telugu country, India*, a box containing shells, a finely preserved specimen of the hog-fish, a bronze idol of Swamee, specimens of writing upon palm-leaf, some memorials of SCHWARTZ, the first Protestant Missionary to India, &c.

From Rev. W. A. PASSAVANT, *of Pittsburg, Pa.*, a box containing minerals, fossils, Indian curiosities, &c.

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Address—"Editors of the Record and Journal, Gettysburg, Pa."

THE  
**LITERARY RECORD AND JOURNAL**

Of the Linnean Association of Pennsylvania College.

DECEMBER, 1844.



CONDUCTED  
 By a Committee of the Association.

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One sheet, periodical—Postage, 100 miles 1½ cent, over 100 miles 2½ cents.

NEINSTEDT, PRINTER, GETTYSBURG.



THE LITERARY

# RECORD AND JOURNAL

OF THE LINNÆAN ASSOCIATION OF PENNSYLVANIA COLLEGE.

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VOL. I.

DECEMBER, 1844.

No. 2.

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## ON THE APPLICATION OF THE BI-CHROMATE OF POTASSA TO PHOTOGRAPHIC PURPOSES.

BY SPENCER F. BAIRD, OF CARLISLE, PA.

Among the Chemical agents used in the various branches of Photography, the Bichromate of Potassa, recommends itself as being the simplest of all, in its practical application to the purpose of copying such objects as can be readily laid flat on paper, and covered with a glass frame. This was first indicated by Mungo Ponton, in the Edinburgh New Philosophical Journal, and was copied into Silliman's Journal, vol. 37, page 361. The trouble of preparing the paper with this salt, of making the impression, and of fixing it afterwards, is much less than that of any other mode, and the great cheapness of the whole, is such as to put it within the power of any one to experiment in this interesting part of the field of Science. It is true that the delicate lines and shades of the Camera image and of fine engravings cannot be distinctly transferred and retained, but to the purpose of copying a coarse print, a piece of music, an embroidering pattern, or a leaf, it is admirably adapted. It is for this latter object, that the art has been mostly used by the writer who, last summer copied leaves of nearly all the trees and shrubs of Cumberland County, amounting to nearly two hundred species. These photographs are as valuable for scientific purposes, as good engravings of the same would be, perhaps more so, as not only is the outline correctly given, but in most cases the fine and delicate nervation, whose arrangement frequently forms a specific character, is distinctly preserved. Thus in the course of a few minutes a facsimile of an object is obtained, which would occupy a skillful artist many hours to draw with even an approximate degree of accuracy.

The bi-chromate of potash is now readily procured in any of the cities at a very cheap rate, but as under some circumstances it may be more convenient to prepare it, we will give the method indicated in the

American edition of Kane's Chemistry, page 450, which appears simplest. It is as follows: mix two parts of chromate of iron ground to a fine powder, with one part of saltpeter and expose it on the floor of a reverberatory furnace to a violent heat. Lixivate the calcined mass with water and add a quantity of sulphuric acid which will convert the neutral chromate of potassa previously formed, into the bi-chromate. This salt is then obtained from the solution by allowing it to cool in a leaden vessel. As thus obtained it is of a rich orange red and is soluble in ten parts of cold water. When applied to paper it is of a deep yellow color, much resembling gamboge.

The apparatus required is as follows: Get a board a little larger than the size of the sheet on which you intend making your impressions; fix a slight cushion on this, and cover it with a piece of black silk. Make a frame just the size of the board, in which insert a pane of glass. The glass should be as nearly as possible flush with the lower side of the frame, so as to come in immediate contact with the cushion.

To prepare the paper, which should be as firm as possible,—make a hot saturated solution of the salt, and let it cool. Take the paper, and if you are preparing several sheets at a time, lay them one on the other; dip a sponge in the solution and go over the upper sheet, (on one side only) in a series of parallel stripes, taking care to cover every part. Then make another series perpendicular to the first; in this manner with a little practice, you will succeed in covering the surface uniformly. Take off this sheet and hang it across a string in a darkened room to dry, proceed in the same manner with the next, and so on till you finish the whole. When dry, put them away in a dark place till wanted for use.

When you wish to make a copy of any object, a leaf for instance, take a piece of the prepared paper of the required size, and lay it on the cushion with the prepared side down, then place the leaf above the paper, set the glass frame over the whole, and clamp it to the cushioned board as tightly as possible. The closer the contact of the paper and object, the more perfect will be the impression, and to this end the cushion will be found to contribute materially. If the impression is to be taken from a leaf freshly pulled, it will be found advantageous to press it between paper for an hour before using, to absorb the superfluous moisture. Set the apparatus thus adjusted, in the sun, and let it remain there from five to twenty minutes, according to the opacity of the object. A little experience will soon indicate the precise length of time. Of course if the sun be partially obscured during the process, the paper must be exposed for a longer time. When finished, the photograph should be taken out in a dark room and put away till ready to be washed. It will be remem-

bered that the impression is taken on the side of the paper opposite to that which was washed with the solution. Enough of the bi-chromate soaks through to answer every purpose, and the surface on that side is not rubbed up by the contact of the sponge, which would make a material difference in the beauty of the impression.

In order to fix the drawings, take a large flat vessel—a waiter answers the purpose—and cover the bottom with them placed side by side. Pour on water to the depth of half an inch and let it stand some minutes. Then take each sheet separately, and after agitating it in the water a little while, lay it on a thin board or the back of a small waiter, and inclining it pour water on it from a pitcher, at a height of about a foot, turn the paper and repeat the process, till the water which comes off is perfectly clear without any tinge of the salt. Lay each sheet as finished over a string, and when perfectly dry, subject them to a moderate pressure in order to smooth them, they may then be kept for any length of time, care however being taken not to expose them unnecessarily to a bright light.

The theory of the process is very simple. The bi-chromate when first applied to the paper is of a yellow colour and very soluble, exposure to the sun turns it brown and makes it insoluble. When therefore the object is placed on the paper, the uncovered parts is darkened, while that which is covered remains more or less yellow, according to the opacity. The washing takes out the soluble yellow parts, leaving the original white contrasting with the brown. The lights and shades are of course reversed as in most of the processes.

The whole expense both of time and money is very small. Paper can be bought for  $12\frac{1}{2}$  cents the quire, quite good enough for the purpose, and a quarter of a pound of the bi-chromate of potassa, at  $12\frac{1}{2}$  cents, will prepare four quires of paper. I have made sixty photographs of drawings, each consisting of half a sheet of foolscap, in a few hours, and washed and finished them in less than that time. When there is a great deal to do it is better to have two frames at work as then while one is in the sun, the other can be got ready.

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#### ON THE REARING OF INSECTS FOR CABINETS.

The rearing of butterflies from the *larva* state is a very interesting pursuit for the Entomologist. He then has the opportunity of observing all the maneuvers of these wonderful little creatures in undergoing their transformations, and in this way only can he procure the best specimens for his cabinet. Butterflies captured in the field are apt to be somewhat

mutilated, or to have their beautiful and variegated colors somewhat rubbed off.

It is a pleasing recreation to furnish for these creatures a cradle, a habitation, food, a grave, and, subsequently a species of immortality; and all this is done by rearing them from the caterpillar state. When nature has laid aside her winter garments and she begins to adorn the trees with foliage, then is the season for sallying forth in quest of the prey. The pursuit may be continued during the whole summer with advantage, for as long as there are green leaves and ripening fruits, the booty may be gained.

Several paper or chip boxes of four or five inches in length, in order to keep the various species, and the naked, and hairy and spiny ones separate, with a layer of soft moss or leaves at the bottom, constitute essential parts of the equipment. Some collectors use a small forceps to take the caterpillars with, but I always employ those with which nature has furnished me—my thumb and finger. Whenever you see the edges of leaves eaten off, you may be sure there is or has been a caterpillar there. Sometimes you can ascertain their presence on a tree or bush from the excrements lying on the ground immediately below. It is also well to spread a white cloth of two or three yards dimension on the ground or hold your expanded umbrella under a tree or bush and then strike the branches with your cane. The caterpillars will fall down uninjured and are then easily taken. If you can reach the leaf on which they are feeding always pluck it off and put leaf and all into the box. Be careful in every instance to note the species of leaf or plant on which your prey is feeding, so that you may go afterwards and procure the food appropriate to it, for most caterpillars rather perish than eat any other vegetable substance. This is an essential point, and if not carefully observed, you may not succeed in your operations. Always pluck off some of the leaves, so that your captives may have provision enough for a day or two, after which you must go out and procure fresh food, which must however, never be given them if it is wet—rub it dry before you feed them. There are a few species of hairy and spiny caterpillars which must be gently handled, or their exceedingly fine and sharp spines penetrate the fingers and occasion a smarting pain, but this is easily removed, by rubbing the part with a little oil. All other caterpillars are perfectly harmless.

When you come home, you must take out your caterpillars and place them in the nurseries. These are either boxes of a foot long and six inches high, the tops of which are covered with gauze or bobbinet—it would be better if the sides were composed of this material also, to allow

a free circulation of air. Some persons use glass jars, but I prefer the boxes. Others have a whole series of little nurseries in a frame, which has very much the appearance of what are called the pigeon holes in a writing desk, with a door or two closing the whole together. Of course the door frame must be covered with bobbinet, and the back of the frame also. Into each pigeon hole or box, put all the caterpillars of the same species, with the species of leaf or plant on which you captured them. But how shall I keep the food fresh for even a day? I will tell you. You should have a short phial nearly full of water in the box, into which you must insert the stems of the leaves, and they will keep fresh for a day or until they are all consumed. Your caterpillars will immediately begin to eat ravenously, and you must be careful to keep them well supplied with provisions, or some species with stout mandibles will bite holes into your bobbinet and escape. But do not some species of caterpillars undergo their transformation in the ground? Yes, and you must meet the exigency of the case, by furnishing them with earth enough to bury themselves in, and this is best done by covering the bottom of the box or pigeon hole with a mixture of *dry* sand and earth to the depth of two or three inches. A little experience will soon enable you to distinguish between those which thus inhumate themselves and those which do not.

But as you will not have an opportunity of engaging in this interesting pursuit until next summer at any rate, I will have the whole winter to talk to you about it, and therefore, shall resume the subject in the next number of the Journal.

ENTOMOPHILOS.

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#### ENTOMOLOGY FOR FARMERS.

FARMERS are generally plain people in their language as well as in their manners. They have, therefore, an aversion to all strange and high-sounding words, and but seldom take an interest in abstruse speculations. Hence "*scientific farming*" has become a by-word among them, and the very idea is generally treated with contempt. We can, therefore, scarcely hope for a patient hearing when we propose to their consideration such a subject as *entomology*. And yet there are few things in which they are more interested, or to which they might naturally be expected to pay more attention.

*Entomology* describes the form and habits of insects, and naturally leads us to a consideration of the benefits which we receive from them and of the injuries which they inflict upon us. These last are points which every farmer discusses at his fireside in the evening and with his

neighbors, as he meets them from day to day. The ravages of the *Hessian-fly*, of the *Cut-worm* and of the *Caterpillar*, arrest the attention and deeply affect the interests of all who are engaged in that most necessary of all pursuits, the cultivation of the earth. And if *entomology* were presented as a remedy or a preventive of some of these injuries, we might expect that our thrifty farmers would not be slow to avail themselves of the advantages which it offers. But this is only a small part of that which it actually does.

"Some knowledge of the classification of insects and of the scientific details of entomology," says HARRIS in his "*Insects of Massachusetts*," a work which ought to be in the house of every farmer, "seems to be necessary to the farmer to enable him to distinguish his friends from his enemies of the insect race. He ought to be acquainted with the transformations and habits of the latter, in all their states, so that he may know how and when most successfully to employ the means for preventing their ravages. This kind of knowledge will often guide him in the selection of the proper remedies, and may prevent him from falling into many mistakes." That this is not mere theory, but connected with the most important practical results, MR. HARRIS has shown in the useful hints which are every where scattered through the work to which we have just alluded, but we content ourselves for the present with adducing a single instance which is found on page 327:

"Among the various remedies that have been proposed for preventing the ravages of *cut-worms* in wheat and corn-fields, may be mentioned the soaking of the grain, before planting, in copperas-water and other solutions supposed to be disagreeable to the insects; rolling the seed in lime or ashes; and mixing salt with the manure. These may prevent wire-worms (*Iuli*) and some insects from destroying the seed; but cut-worms prey only on the sprouts and young stalks, and do not eat the seeds. Such stimulating applications may be of some benefit, by promoting a more rapid and vigorous growth of the grain, by which means the sprouts will the sooner become so strong and rank as to resist or escape the attacks of the young cut-worms. Fall-ploughing of sward-lands, which are intended to be sown with wheat or planted with corn the year following, will turn up and expose the insects to the inclemency of winter, whereby many of them will be killed, and will also bring them within reach of insect-eating birds. But this seems to be a doubtful remedy, against which many objections have been urged.\* The only effectual remedy at present known, has been humorously described by

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\* See Mr. Colman's "Third Report of the Agriculture of Massachusetts," p. 62.

Mr. Asahel Foote in the "Albany Cultivator," and reprinted in the seventeenth volume of the "New-England Farmer." After having lost more than a tenth part of the corn in his field, he "ordered his men to prepare for war, to sharpen their finger ends, and set at once about exhuming the marauders. For several days it seemed as if a whole procession came to each one's funeral, but at length victory wreathed the brow of perseverance; and, the precaution having been taken to replace each foe dislodged with a suitable quantity of good seed-corn, he soon had the pleasure to see his field restored, in a good measure, to its original order and beauty, there being seldom a vacancy in a piece of four acres." Mr. Foote's statement, founded on an estimate of the time employed in digging up and killing the cut-worms, and the increased produce of the field, is conclusive in favor of this mode of checking the ravages of these insects."

W. M. R.

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MISCELLANEOUS FACTS IN NATURAL HISTORY.

*A Surprise.* Some time ago I was on a collecting expedition in the woods, and very soon captured a small lizard (*Salamandra Glutinosa*) which I put into a bottle used for such purposes. I had not proceeded far before I took a beautiful snake (*Coluber Punctatus*) and deposited it in the same bottle as a companion for the lizard, of course, both animals were living, and I thought they might amuse themselves as they pleased, until my return home, when I would make a different disposition of them. A few hours after, when I emptied my pockets, hat and boxes of the various objects I had captured during the tour, I came to the bottle containing my two reptilian friends whom I had introduced to each other. The lizard was invisible! I knew he could not have escaped, for the bottle was tightly corked, but still I felt in my pocket and looked again and again, but he was gone. In examining the snake, I thought I observed a sensible expansion in his abdominal regions since his capture. I was on the scent now; I took the serpentine gentleman out, who kindly permitted me to handle him; I gave him a gentle squeeze on the stomach below the protuberance. I felt something move—I gradually worked the moving substance towards his mouth, and lo! the lizard came forth! I did not intend on their first introduction to each other, that they should become quite so *intimate*, but I presume the snake said, "I'll take you under my protection in adversity," and—*swallowed him*.

*Rattle Snake and Rats.* A gentleman of my acquaintance a few weeks ago received a large living rattle snake (*Coluber Durissus*) from Missouri. The animal was confined in a wire cage. It had not taken

any food for several months and on its arrival here, several mice were put into the cage. The new occupants betrayed no alarm at the presence of their ugly companion, but danced about nimbly and raced over his snakeship, who showed no inclination to molest his little murine associates. The mice would even nibble at his scales, when the serpent would shake them off by a slight contortion, as though he were not fond of being tickled by a mouse. It was only some hours after, that he bounced on one of his little tormentors, stung him with his fangs and swallowed him whole. The other mice now continued to play about and even nibble at his nose with impunity. A large rat was now put in the cage, and he felt disposed to show fight—but the snake turned away. We were waiting the issue a long time, and after the rat was in the cage unharmed for five or six hours, we provoked the snake by moving the cage, which caused the mice and rats to run over him more rapidly. After a long trial to rouse his serpentine ire, he at length, stung the rat, who uttered a faint squeak and died in about eleven minutes. After he was smitten, he played about as usual, but his efforts grew fainter until he died. In about half an hour, the snake opened his enormous jaws and made an effort to swallow him, but after repeated trials, he failed. Another large rat was put in and now there was a regular battle. The rat fought valiantly, biting the snake severely in the nose several times, but at length, by a dexterous turn of the serpent, the poor rat received the fatal wound and perished.

J. G. M.

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#### FACTS FOR MECHANICS.

*To case-harden Iron.* 1. It is well known to mechanics, that iron is not capable of being hardened like steel.

2. It is often important to render the *surface* of a particular portion of a piece of iron hard, whilst the rest remains soft iron. This is called *case-hardening*.

3. The old method of producing this effect, which was both troublesome and consumed much time, consisted in introducing the article to be case-hardened, together with fragments of old leather, or hoofs, skins, or horns, into a box of sheet-iron, and subjecting the whole to a strong red-heat for an hour or two. During this time the exterior surface of the iron absorbs and combines with a portion of the carbon of the animal matter, and is converted into steel, as in the ordinary process of forming steel. The article of iron thus treated is coated with a case of steel which may be tempered or hardened in the usual way; and is therefore said to be case-hardened.

4. The same result is obtained at a trifling expense, and almost without any trouble, by heating the article to be case-hardened to a cherry-red, applying to the part of the surface to be hardened the *Prussiate of Potash* (Ferrocyanide of Potassium) in *powder*, and after the lapse of a minute or two, heating and tempering as for steel. The advantage of this process, besides the saving of time and expense, is that the application can be made to any part of the surface required, be it large or small, and the case may be made of any desirable thickness, according to the quantity of the *Prussiate of Potash* applied, thus securing a plate of steel without the trouble of welding. This process may be very advantageously applied in numerous instances.

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ENGLISH PHONOGRAPHY, NO. I.

BY PROF. W. M. REYNOLDS, OF PENNSYLVANIA COLLEGE.

*Letters* are not *sounds*, but they are *signs of sounds*. So far, therefore, as the *sound* is concerned one letter or sign will answer the purpose just as well as another, although for convenience in writing or printing them one may be greatly preferable to another. But that the same letter should always, in the same connection, indicate the same sound, we think no one can doubt. It must not only render the acquisition of a language more difficult to have but one letter to indicate several sounds, but it must also promote its corruption, and prevent its improvement. That this is one great source of the unsettled state of pronunciation in the English language, no one can doubt who has noticed the mistakes of beginners and readers of almost every class. And that uniformity of pronunciation would naturally, although slowly, follow a proper system for the notation of sound seems almost self-evident.

The imperfections of English Orthography, or, as I prefer calling the notation of spoken sounds and words by means of signs or letters, PHONOGRAPHY;\* are so numerous and so obvious as to be universally acknowledged. So much is this the case that it seems almost a work of supererogation to specify them. Yet it may assist in bringing us to the point we have in view, to give a general view of the state of the case.

According to the most careful analysis of our spoken language it contains *thirty-two* † sounds or modifications of sound. To represent these we have *twenty-six* letters. Of these A represents *four* sounds, E *three*, &c., whilst several letters are frequently employed to express at one time

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\*  $\varphi\omega\upsilon\eta$ =voice, and  $\gamma\zeta\alpha\varphi\omega$ =I write.

† See the excellent article of PROF. DAY, of West. Reserve College, on "*English Phonology*," published in the *Biblical Repository* for October, 1843.

a single sound, as *ough* in *dough*, at another entirely different sounds, as *ough* in *dough*=*do*; *rough*=*ruf*; *through*=*throo*; *plough*=*plow*, &c. Then again one letter represents several sounds at the same time, as X for *ks* or *gs*, or finally, it is not the representative of any sound at all, as in the case of what is called the final *E mule*. How perplexing, discouraging, and destructive to correct pronunciation this is, is shown not only in the story of the poor Frenchman laboring at *plough*, *through*, *thorough*, *dough* and *tough*, but in the blunders by which those who ought to be able to manage their mother-tongue, so often turn the sublime into the ridiculous.

Is there no remedy for this evil, or are we not to regard it as an evil, but as a beauty of our *Phonography*? Are we to rest satisfied with the conclusion at which the late venerable and learned PETER S. DUPONCEAU arrives,\* when he says: "I am not, therefore, one of those who wish to see any innovation introduced into the alphabet or orthography of the English language. No, let our written language still retain its venerable garb, *nos ancients habits de sauvages*, as M. de Voltaire would call them, but still more decent than the masquerade dresses under which men of more fancy than reflection, would disguise the immortal thoughts of Milton and of Shakespeare, so that the eye would no longer at once recognise them, and the straight and well trodden path by which they now, without difficulty, reach the mind, would be made crooked, difficult of access, and overspread with nettles and thorns."

With the most profound respect for such high authority, and deeply sensible of the difficulty of an enterprise the least part of which has hitherto baffled the genius and resisted the energy of such men as WEBSTER and the lamented GRIMKE, and not absolutely indifferent to that shower of ridicule with which the self-constituted conservators of "*the purity of the English language*," will at once visit this daring invasion of their peculiar province, I must still dissent from this conclusion, and beg leave to make some suggestions for the improvement of our English Phonography. In this I am fortified, to say nothing of others, by Duponceau himself. "While I thus disclaim," says he, "every wish to innovate upon our written language, I am not insensible of the importance of endeavoring to acquire as perfect and accurate a knowledge as possible, of the elementary sounds of which our spoken language is composed. The correct pronunciation of a language cannot be preserved, unless it is *precisely fixed and ascertained*, and that cannot be done unless all its component sounds are accurately known and *clearly distinguished from each*

\* In his valuable "*Essay on English Phonology*" published in the "Transactions of the Am. Philosophical Society," vol. 1 New Series, pp. 236-7.

*other.* Although I have not found it an easy task to complete this analysis, a much greater difficulty still remained, which was to convey the result to the mental ear through the organs of sight. I had no other instrument but *the English alphabet which is not only inadequate but deceptive.*"

This admits the evil of which we complain in its full force. An alphabet is to represent this analysis of a language, and if it does not do so is worse than useless, or as the author whom we have just quoted says, "is not only inadequate, but deceptive." This being the acknowledged fact, we must find some substitute for the existing alphabet. This has already from the necessity of the case been done, but, as we have seen above, it has been done in a very unsatisfactory manner, by making one sign the representative of several entirely different sounds, and ascertaining which of these it is by tradition, or by some other sign connected with it. But this is not a natural or an easy method. To this DUPONCEAU himself directs us: "There was no possibility of getting over this difficulty but by devising a new instrument in lieu of [the old] alphabetical signs, but what instrument could I find that was not at least composed of those treacherous and insufficient elements? If I succeed in my endeavor, which is to give a clear idea of all the sounds existing in the English language, nothing will be so easy, as afterwards, to affix signs to them, and an auxiliary table of characters, to be used only as an instrument by which to compare, fix and ascertain the pronunciation of words, and as a key to pronouncing dictionaries in lieu of the insufficient letters and figures that have hitherto been used."

It is my object to make our existing English alphabet, and a few additional and simple characters answer these purposes not only to the learned, but also to the child, the unlettered man whose literature extends not beyond his county newspaper and his almanac, and also to the foreigner of whatever nation. And in doing so, I am not afraid that this will tend "to the destruction of our literature, and perhaps, ultimately, to the entire corruption of our language," but believe that it will be favorable to the preservation of the one and the purification of the other.

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### HOW IS SALT PROCURED?

BY PROF. CHAS. A. HAY, OF GETTYSBURG.

There are various ways of obtaining salt. It can be dug out of the earth in some places in a state fit for immediate use. It is thus obtained in several of the Polish mines.

More frequently it is procured by the evaporation of sea-water. Great quantities are thus made in England, Scotland and in our own country.

Subterranean saline springs furnish the principal supply for Germany. In most of the larger states these are found and some of them have been known and used for a thousand years. Near Gnadau not far from the fortress of Magdeburg, in Prussia, there is such a salt spring of great value. The water is raised to the surface of the ground by steam; but as it does not contain more than ten or twelve per cent of salt, and holds several other mineral substances in solution, it must undergo a filtration before it is fit for evaporation. For this purpose faggots are piled up in immense numbers, forming a rampart a mile and a half long, fifty feet high, thirty feet wide below and twenty at the top. The salt-water, after being collected in reservoirs above ground, is elevated by a windmill to the summit of this long pile at its upper end. It is there discharged into a trough four feet wide and deep that runs along the top. This is supplied with stop-cocks along both sides, through which the water is let out to trickle down through the faggot pile. As it drips from twig to twig, and is thus completely exposed to the air, much of the water is thus spontaneously evaporated and a thick coating of carbonate of lime deposited upon the faggots. These soon become clogged with incrustations of lime and salt and are then removed and pounded up for manure, their place being supplied with fresh ones.\* When the water has trickled down through the pile and been received there into the wide troughs that accompany it during its whole length, it is found to be considerably increased in saltiness, but several more filtrations are still necessary to give it the requisite proportion of salt, viz: twenty-six per cent. It is therefore raised again by another windmill (twelve of which stand along the top of this singular pile, like sentinels upon a rampart) and made to undergo a second, and third, and fourth, exposure to the air in its downward progress through the faggots. Reaching at length the end of this huge filtrating apparatus, and having gained its required percentage of salt, the brine is now received into iron pipes that convey it under ground two miles to the river Elbe, on the banks of which stand the extensive buildings that contain the cauldrons for evaporating it. The reasons for conveying it to the river no doubt are, the convenience of the fuel there and the ease of transportation.

Similar springs, though far richer, have given name and wealth and population to Halle, in Prussian Saxony—(Halle from  $\alpha\lambda\varsigma$ =salt.) The saline springs here were known to the Romans, and have seasoned the

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\* Specimens of this incrustation may be seen in the Cabinet of the Linnæan Association of Pennsylvania College.

food of many a heathen festival. The true descendants of the ancient Wends still carry on these salt works. They constitute a distinct class of the population of Halle, preserving the features, many of the customs and even the dress of their ancestors. They are called *Halloren* and enjoy many privileges and immunities not granted to the other inhabitants of Halle; such as fishing in the river Saale that flows by the town; burying all the dead, for which they receive regular fees; freedom from many taxes, &c. It was the *Halloren* that, as the rightful representatives of the city, arrayed in their flowing black robes, small clothes and *chapeaux d' honneur*, first welcomed the King of Prussia on his visit to Halle, in 1842. They have also the exclusive privilege of laboring in the salt works.

As at Gnadau, the water is here pumped up by steam. Twelve hours the current flows into the reservoirs of the salt companies of Halle, and the succeeding twelve hours into the reservoirs of the royal works on an Island in the Saale. The evaporation of the *Sole*, as it is called, is a simple process. It is received into cauldrons twenty-five or thirty feet square and three feet deep, supported by iron pillars. A fire of brown coal (a sort of peat dug near Halle\*) is constantly kept up beneath. The salt crystallizes on the surface of the water and then is instantly broken up by the ebullition and sinks to the bottom, where it is constantly stirred to prevent its consolidation. Raked to the sides of the cauldron, it is then shovelled out by half naked *Halloren*, who move about with great dignity amid the volumes of vapor that continually ascend, and is thrown into troughs immediately above, where it is allowed to drain off. It is then conveyed to the lofts where it is thoroughly dried in an atmosphere of from 120° to 130° Fahrenheit.

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#### FACTS IN METEOROLOGY, NO. II.

BY PROF. JACOBS, OF PENNSYLVANIA COLLEGE.

In the preceding number of this Journal an effort was made to derive a general law of atmospheric change from a consideration of some particular facts. That law was stated nearly as follows: "*During every seven days and a half two changes, upon an average, in the condition of the atmosphere take place,*" or during that period two seasons of

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\* This brown coal is almost the only kind of fuel used at Halle. It is dug in deep pits and is a soft friable mass when first obtained, and must be made into a paste with hot water and cast into moulds about the size of a brick before it can be used. This operation is generally performed by females of the lowest class who stamp it into a paste with their feet.

cloud and rain, and two of clear weather occur. Some additional facts relative to the same subject will claim attention in the present number.

1. It might readily be expected that in a mass so changeable as the atmosphere, these conditions should vary considerably at each recurrence. The circumstances of the cloud and rain, and of the clear weather of one week do not exactly agree with those in the next. The degree and duration of the cloudiness, and the quantity of the rain or snow of Tuesday night of the present week will not agree exactly with those of the past week; there may be either less or more according to the quantity of moisture in the air, the temperature of the day or two next preceding, and the currents at the same time. It may happen therefore that any of these periods of rain may pass by with nothing more than a partial obscuration of the sky, being followed at its next recurrence with the usual accompaniment of rain. It sometimes happens too that the cloud begins to cover the sky some hours or even a day before the regular time of its occurrence, but then it may be expected to continue just about as much longer afterwards, shortening the time of clear weather, and perhaps extending on to unite with the next period for cloud, so as to obscure the sky for a whole week. Thus when the cloud and rain of one period extend beyond 24 hours, they will most likely continue as rain, drizzle or fog until the third day, and then break away, or unite with that which is to follow. Hence we have damp and rainy weather, sometimes for three days, sometimes for a whole week, and sometimes, as in June, 1835, for a whole month, without affording a sight of sun, moon, or stars. The reverse precisely sometimes takes place; the clear weather extending over the whole week, and even longer. During the occurrence of this state of things the winds are more gentle, and less variable than ordinarily, and blow, during the clear weather, from some part of the western half of the horizon.

2. Nor is this succession of two changes in about seven days and a half, or of one each three days and three-quarters, confined only to what are termed *settled* rains, that is, to those rains which are not mere showers, but which extend over several successive hours in duration, and a wide territory in extent. It extends also to the thunder showers of summer. These too, instead of being occasional, and interlopers as it were, according to the prevailing impression, belong to the regular system of rains. The electric display accompanying them is merely an accidental circumstance resulting from the active local condensation of vapor, and not always absent from the settled rain at its commencement or end. Not unfrequently do we find the extended rain ushered in by thunder clouds. Side by side, like the front ranks of an army in battle array,

gathering with portentous blackness and armed with the fiery artillery of heaven they come as the van guards of the approaching storm. Soon these are succeeded by the great moving mass of cloud, of which they were the precursors, which noiselessly and gently sheds down upon the earth the choicest blessings of the skies. At other times after the rain has, for some time, silently descended and refreshed the thirsty soil, as if gathering up all their strength for one great effort, at once, amidst lightnings, and thunders, and tempest, the clouds pour down upon the earth their treasured waters, and then move off, leaving a clear and brilliant sky. The thunder shower of summer belongs therefore to the regular system of rains. If on the proper day the extended rain do not occur, there is a strong probability that there will be thunder showers, which may be regarded as the great rain in detached portions. But if that day pass without either, then three or four days, or about seven days will pass before the next showers may be expected to fall. These statements will be confirmed by a reference to any correct register of the weather during the summer.

The circumstance that the thunder-cloud is generally found to move eastward from some point near the west, whilst in the extended rain that portion of the cloud which is in view moves either from the north east, or some point near to it, or in the reverse direction, presents no difficulty in classifying both under the same general head. The thunder-cloud moves in a more elevated stratum of air than the lower portions of the regular storm-cloud; and that stratum is always moving from some westerly point of the horizon. Hence the upper portions of the extended cloud, which extend up into this stratum, are also found to be moving in the same direction. Whilst therefore the great mass of cloud is swept in a vast curve from the West Indies over us towards the north east, the upper portions are continually blown off towards the east, thus extending the storm on its eastern border.

3. Another fact worthy of attention is, that in general, no particular kind of weather, such as extreme heat or cold, storm or calm, can continue longer than *about two days*. The change usually occurs on the third day. Thus in winter when the weather is very stormy and cold, we may look for a cessation of the storm, and a mitigation of the cold after the lapse of forty-eight hours. Or in summer, when the heat is excessive, the third day brings refreshing breezes, or cooling showers. In autumn, or winter, or spring, a calm and cloudless day is usually followed in twenty-four or thirty-six hours by rain or snow.

Thus, then, amidst the greatest apparent irregularity and lawlessness, we find that there is a beautiful regularity of succession in the phenomena

of atmospheric change. In proportion as facts are studied and classified do the laws of that change appear to stand forth the more clearly.

*Pennsylvania College, Nov. 26th, 1844.*

TENTH ANNUAL COMMENCEMENT OF PENNSYLVANIA COLLEGE,  
*Thursday, September 19th, 1844.*

It was our intention to have noticed this interesting occasion at some length in our first number, but want of room (one of the greatest difficulties under which the JOURNAL labors) prevented us. We can only say now, that the exercises were of the most satisfactory character from beginning to end. The address of Rev. T. F. STOCKTON, of Philadelphia, was brilliant, that of Rev. THEOPHOLUS STORKE, before the *Alumni*, most effective, whilst the graduates showed that they had not sojourned so long in the halls of their *Alma Mater* without becoming sons of whom she has reason to be proud. The class consisted of the following members: *J. Baugher Bittinger*, of Adams co., Pa.; *Peter Anstatt*, of Lycoming co., Pa.; *Oscar F. Baugher*, of Emmitsburg, Md.; *Michael Diehl*, of Greencastle, Pa.; *John M. M'Farland*, of Jeff. co., Va.; *Beale M. Schmucker*, of Gettysburg, Pa.; *John T. Morris*, of Baltimore, Md.; *Joseph P. Clarkson*, of Gettysburg, Pa.; *G. A. Nixdorff*, of Frederick, Md.; *Henry J. Fahnestock*, of Gettysburg, Pa.; *Thomas W. Corbet*, of Cambridge, Ohio; *Robert G. H. Clarkson*, of Gettysburg, Pa.

The degree of A. M. was conferred in course upon the class of 1841, and the *honorary* degree of A. M. upon Rev. *D. Miller*, of New Jersey, Rev. *John Ulrich*, of Petersburg, Pa., and Prof. *Haldeman*, of Marietta.

The Rev. *H. N. Pohlman*, of Albany, New York, received the degree of D. D.

OUR COTEMPORARIES—Newspapers, Literary and Scientific Magazines and Journals, whom we cordially thank for their flattering notice, will please exchange with us, whenever they can do so *without "charging us the difference."*

THE LINNÆAN JOURNAL. The flattering reception with which the first number of this Magazine has met will assure the Society that it did not mistake in reference to the feelings with which the literary and scientific public would receive such a publication. All that is now wanting is, that the members of the Association and the friends of the enterprise generally should continue their exertions to increase the number of subscribers to *one thousand*, when, besides yielding a handsome profit, the *Journal* may be greatly enlarged and improved by engravings, &c. which are almost indispensable to such a publication as this.



# Pennsylvania College, Gettysburg, Pa.

## FACULTY AND INSTRUCTORS.

- Rev. C. P. KRAUTH, D. D.—*Pres't and Prof. of Ev. of Christ., Moral Science, &c.*  
Rev. H. L. BAUGHER, A. M.—*Prof. of Greek Language, Rhetoric, &c.*  
Rev. M. JACOBS, A. M.—*Prof. of Mathematics, Chemistry, &c.*  
Rev. W. M. REYNOLDS, A. M.—*Prof. of Latin, Mental Philosophy, &c.*  
M. L. STOEVER, A. M.—*Prof. of History and Principal of Preparatory Department.*  
Rev. CHAS. A. HAY, A. M.—*Prof. of German Language and Literature.*  
DAVID GILBERT, M. D.—*Lecturer on Anatomy and Physiology.*  
Rev. J. G. MORRIS, D. D.—*Lecturer on Zoology.*  
WM. ALBAUGH, A. M.—*Tutor and Teacher in Preparatory Department.*  
MR. H. R. GEIGER.—*Teacher of Writing.*

PENNSYLVANIA COLLEGE has now been chartered about fourteen years. During this time its progress has been such as to gratify the most sanguine expectations of its friends. The course of studies is as extensive and substantial as that of any Institution in the Country. The *Preparatory Department* provides for instruction in all the branches of a thorough English, business education, in addition to the elements of the Mathematics and Classical Literature. The *College Course* is arranged in the four classes usual in the Institutions of this country.

The government of the students is as energetic as their circumstances seem to require. They attend at least two recitations a day, Church and Bible Class on the Sabbath, and are visited in their rooms so frequently as to preclude the danger of any great irregularities. It is believed no Institution in the United States has more exemplary young men in connexion with it. They are all required to lodge in the College Edifice, special cases excepted.

The annual expenses are—for board, tuition and room-rent, during the winter session, \$61 87½; for the summer session, \$41 87½. Washing, \$10 00; and Wood, \$3 00. Total expense, \$116 75. Boarding can be obtained in town at \$1 25 per week.

There are two vacations in the year, commencing on the third Thursdays of April and September, and each of five weeks continuance.

The winter session commenced on the 24th inst., with the accession of about twenty Students in the Freshman Class, admitted at the close of the summer session, and a respectable number of applicants for admission into the Preparatory Department.

## Acknowledgements of Donations to the Cabinet of the Linnæan Association of Pennsylvania College.

- Nov. 4. Indian (N. Am.) articles of manufacture, Texas coins, paintings, minerals, shells, &c. *from various ACTIVE MEMBERS OF SOCIETY.*  
Nov. 12. Various curiosities presented by Miss NEWELL, of Eglinton, N. J. per Mr. R. G. H. CLARKSON.  
Nov. 20. Three boxes of minerals and fossils, through Dr. J. G. MORRIS, of Baltimore, Md.  
Nov. 28. A box of minerals (*about two hundred and fifty specimens,*) from W. W. and Mr. VICTOR S. CONRAD, of Schuylkill Co. Pa.

TERMS OF THE RECORD AND JOURNAL. *One Dollar per annum in advance.* Postmasters will frank and remit subscriptions.  
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VOLUME I.]

[NUMBER 3.

THE  
**LITERARY RECORD AND JOURNAL**

Of the Linnaean Association of Pennsylvania College.

JANUARY, 1845.



CONDUCTED  
By a Committee of the Association.

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One sheet, periodical—Postage, 100 miles 1½ cent, over 100 miles 2½ cents.

NEINSTEDT, PRINTER, GETTYSBURG.



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SUBTERRANEAN SALT WORKS.

BY PROF. CHAS. A. HAY, OF GETTYSBURG.

For an article of consumption, so necessary as salt, no government will consent to be dependent upon another, whilst there is the least prospect of obtaining it at home. But where the country lies at a distance from the sea, and possesses neither saline-springs nor mines of native salt, where then must she look for a supply of this necessary commodity? The mountainous regions of Austrian Tyrol furnish us with an interesting answer to this query. The salt is there found saturating the calcareous rock in the heart of the mountain; and the mode of obtaining it is by bringing fresh water into contact with this salty rock until it acquires a sufficient saline percentage, when it is tapped off and evaporated at the foot of the mountain.

On the evening of the 19th of September, 1842, the writer, in company with a young friend from Boston, paid a visit to the salt works of *Hallein*, in the district of Salzberg, in Austrian Tyrol. It was already six in the evening when we reached Hallein, and, supposing that we had come too late to gratify our curiosity by an inspection of the mines that day, we were making arrangements to spend the evening differently. But a guide soon made his appearance and offered his services to conduct us at once to the spot, assuring us that day was always night in the mines.

The town lies at the foot of a steep hill, the Durrenberg. This we began to mount. Continuous flights of steps, with here and there a gravelled walk, where the ascent was less precipitous, brought us, after a fatiguing climb of three quarters of an hour, to the village nestling in a depression of the hill-side and commanding a delightful prospect. Hallein, with its crooked streets, smoked houses and volumes of steam from the cauldrons of the salt-works, lay at our feet. The fertile valley of the Salza stretched away to the north, populous and highly cul-

tivated.—“Gentlemen, will you please to walk in and dress yourselves,” said a rough looking miner, whose business we found was to see us safely through the works. “Dress ourselves! Why L. I think we are dressed well enough to go into such company as we shall be apt to find below ground.” “Too well, is probably the meaning of it.” And so it was. It was a capacious linen dress that we were to put on over all, with a stiff leather apron tied on behind to sit upon, a stout cap to protect the head from blows against the rocks and beams in the low galleries, and a buckskin glove for the right hand. Thus equipped and furnished with a light, we were prepared for a descent into the lower regions. Before setting out I purchased select specimens of the various forms under which the salt appears in this mine, crystalized in beautiful transparent laminæ, in granular masses of a bright pink color, combined with a dark grey argillaceous rock and with the carbonate of lime, &c.\* And we supplied ourselves with sets of pictures, illustrating the descent and the labyrinths of the mine itself. Through a handsome portal, embedded in the mountain side, we entered a horizontal shaft about four feet wide and six high. This led us right towards the heart of the mountain. Wooden pipes along both sides convey fresh water into the mines. At first we found this tunnel lined with masonry, but presently we were walking through the solid limestone rock, and then, a few rods further on, we reached the salt. This first shaft carried us in a straight line four hundred and ninety-three Salzberg fathoms into the mountain. “Now, gentlemen,” said the miner, who was conducting us, as we reached the end of this shaft, “I have the honor to inform you that you are in Bavaria.” We had in fact left the dominions of his Imperial Majesty and passed from Austria into (under) Bavaria during our progress through this tunnel. We found ourselves now at the mouth of a pit, descending through the rock at an angle of  $41\frac{1}{2}^{\circ}$ , called Freudenbergrolle. Our guide at once set about preparing for the descent. Two stout poles, made very smooth and laid upon the rock about a foot apart, formed the inclined plane upon which *we were to slide down*. The guide adjusted his apron, threw one leg over each pole, seized a rope that was stretched tightly alongside, and holding up the light in his left hand, slid down a few yards to show us how the thing worked. We were convulsed with laughter. I was half afraid to try the experiment, for it seemed to me I would surely roll down heels over head. “Never mind,” said the guide, “only hold fast to the rope, and if you roll, I am in your way and can hold you back.” We took it

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\* These specimens are now in the possession of the Linnæan Society of Pennsylvania College.

very deliberately at first, but as our courage rose our speed increased, and it certainly was not two minutes before we were all safely landed at the foot of the slide, three hundred and fifty feet from the launching point. We now took to our feet again and passed along for some distance through a horizontal shaft, cut through a rock impregnated with salt. The guide told us the rock grew. As we seemed disposed to question the truth of his assertion he directed our attention to an old shaft, that had once been as large as the one we were then passing through, but not being used for many years its sides had gradually approached each other until nothing but a narrow crevice remained. The galleries through the salt rock are for this reason cased with beams of wood in many places, notwithstanding which they are constantly diminishing in height and width and must be trimmed out occasionally.

We stopped to observe a miner at work. He had just commenced a new shaft, at right angles to the one we were traversing. It was scarce two feet wide and but five high; he had driven it perhaps eight feet. There he stood, in that narrow cell, with his lamp beside him, picking away the rock with a mattock;—such an atmosphere! The poor fellow had nothing on but a pair of pantaloons, and the perspiration was streaming from him. *Two hundred* men are employed here in this way; they work six hours in the twenty-four, relieving each other in companies of fifty. Their wages are sixteen cents a day, (20 Kreuzers.)

Another inclined plane 390 feet long, at a somewhat steeper angle, viz.  $45\frac{1}{2}^{\circ}$ , brought us to another horizontal gallery or shaft that soon widened into the *Chapel of the Virgin*, a room perhaps twelve feet square, with an altar upon which lights are constantly kept burning. A fountain of fresh water here slaked our thirst. The stiffened cap which the miner had induced me to put on was shortly afterwards of essential service. Taller than the rest I was walking along briskly after them when my head came in contact with one of the beams that encased the shaft; but for the cap I should have been completely stunned.

We next slid down the *Königsrolle*, at an angle of  $37\frac{1}{2}^{\circ}$ , and struck off immediately into a shaft where our progress was presently interrupted by a flight of steps. Ascending these, *a fairy scene burst unexpectedly upon us!* We stood upon the shore of *a subterranean lake brilliantly illuminated!* Imagine our surprise and delight! We stood for some moments entranced. A platform with several sofas upon it lay invitingly before us upon the water. Scarcely had we taken our seats before the whole affair began to move off, and we found ourselves leaving the shore, by what agency we could not tell. Overhead, within reach when standing upon this apparently automatic platform, was an unsus-

ported roof of solid rock. It made one tremble to think of the mountain mass above him, with nothing but the solidity of the rock in the bosom of which he was moving, to prevent it from falling in and crushing all beneath. The lights ranged round this sheet of water were all seen again in its placid surface; the pyramids inverted, his Imperial Majesty, in a gay transparency, dancing upon his head among the ripples caused by our floating platform. And now we neared the opposite side. The stillness of the grave reigned in the heart of the mountain. The spontaneous burst of surprise by which we had at first involuntarily disturbed it, had been succeeded by a silence that no one ventured to break. But who could have refrained from a hearty laugh at the odd appearance of our Charon, who, sheltered behind a pyramid of lights, had all the while been industriously engaged at a windlass, silently transferring us from one side to the other of this fairy sea? We never gave a Trinkgeld in a better humor; surely it had seldom been received with a more comical grin. The dimensions of this lake are stated, in the statistical account of the mine, which I purchased on the spot, to be fifty-five fathoms and six feet long (Salzberg measure,) and twenty-eight fathoms wide. Reckoning the fathom at fifty feet, would stretch our subterranean sail to nearly a thousand. It did not seem half that long to me, but I was entranced the while and took no note of time or distance.

Leaving the lake we advanced some distance further in a horizontal shaft, of the usual narrow dimensions. At the point of its intersection with another, some fifteen or twenty feet square of the salt rock had been cut away, and several monuments erected to the memory of some of the archbishops of Salzberg, who once owned and blessed these mines. We did not stop long to decipher all the good deeds recorded of their episcopal highnesses, for we grew indignant at their very names, calling up, as they could not fail to do, associations so painful to every Protestant, not to say Lutheran.

We passed on to the chamber of curiosities. There are preserved large and splendid specimens of the various minerals yielded by the mountain. Especially interesting were some relics of the ancient Romans, who had already penetrated these recesses. Mining implements have been found *embedded in the rock*, and in one instance a piece of raw hide, both ends of which are exposed whilst the middle is completely buried in the solid stone.

We were not sorry to find another inclined plane at the end of this shaft; we had grown quite fond of this kind of locomotion. This descent was at an angle of  $42^{\circ}$ . But our sailing and sliding were now at an

end; we were to be forwarded from this point by railroad. What?—A railroad too in the mountain? Nothing more sure. There stood the car before us, viz. a sort of long wooden horse that we had to mount, one behind the other in true equestrian style, and there stood a couple of sturdy fellows, one at the head and another at the tail, prepared for locomotion. The wheels ran in grooved logs, and as there was a gradual descent, we did not need much motive power. The men trotted along briskly down the narrow, damp and dripping shaft, but it seemed interminable. The lights had, all but one, been extinguished by the water that dropped from the ceiling of the shaft; we were completely chilled by sitting so still in that cold moist atmosphere, and the monotonous trip-trap of the porters was becoming intolerably irksome when, all of a sudden, we found ourselves in the open air and the moon shining sweetly down upon us. We had been just two hours and a half in the mountain.

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A LETTER OF THE DISTINGUISHED NATURALIST, THOMAS SAY,  
TO REV. J. F. MELSHEIMER.

DEAR SIR—After a considerable interval occasioned by absence from this country, I once more have the pleasure to address my friend. In my last letter I informed you that I was about setting off upon a journey into Florida, in pursuit of objects of Natural History. This has been accomplished. I accompanied the president of our Academy, Mr. Wm. Maclure, (a gentleman well known in Europe and America for science and beneficence,) in his carriage, by easy journies as far as Charleston; we there took the steamboat to Savannah, and sent on the carriage by land. At Savannah we met our companions Messrs. Ord and Peale, who had arrived a day or two before us from Philadelphia by sea. Here the carriage and horses were sold, and we chartered a sloop of about thirty tons burden, and after laying in our stores and necessaries we commenced our voyage toward the promised land. We stopped at each of the Sea Islands in order to examine their productions and the sea coast for Crustacea, Mollusca, &c., took in another supply of provisions, &c. at St. Mary's, and then continued our voyage to the St. Juan. This noble river we ascended as far as Picolata, an old Spanish fortress now in ruins, about 100 miles from its mouth, stopping occasionally at such places as presented an inviting aspect, and making short excursions into the country on each side of the river. From Picolata we crossed the country on foot to St. Augustine in order to present our passports to the Governor of the Province, and to obtain from him such information

as might direct our further progress with the greatest probability of success. From him we learned that on account of the hostility of the Indians, it would be the extreme of imprudence to venture any further up the river, but that in the present state of things we would be more safe in exploring the more southern rivers and coast, such as Mosquito river, &c. We, therefore, returned disappointed to our little vessel and retraced our voyage to the mouth of the river with the intention of going to Mosquito river, and perhaps as far as to Cape Florida, but learning that the Indians were troublesome in the south, so that we would be in great jeopardy there, we determined once more to ascend the St. Juan as high as we had been before, and again seek upon the adjacent country for all those subjects of Natural History of which the acquisition was the sole object of our undertaking.

As we re-descended the river we heard of parties of Indians who had been committing depredations, and one person informed us that a few days previous, his plantation was totally destroyed by them, and his son killed, he narrowly escaping with the remainder of his family, and with the graze of a rifle ball on his forehead. The Indians then took the road to Picolata; so that we departed from that place in good time, as it seems probable they went in quest of us.

After remaining a few days at the mouth of the river to make further collections, we began our return voyage; we examined more in detail all the Georgia sea islands, visited Fernandina in Amelia Island, St. Mary's, Savannah, Darien, &c. At Charleston we abandoned our sloop and embarked on board of a packet ship for this city, to which we have all returned in good health, and without any casualty. Thus, in consequence of this most cruel and inhuman war that our Government is unrighteously and unconstitutionally waging against these poor wretches, whom we call savages, our voyage of discovery was rendered abortive, as we were not in Florida at the season we wished, the spring; we therefore, obtained but very few insects, and these few of but little consequence. My discoveries were principally in the Crustacea.

*Philadelphia, June 10th, 1818.*

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#### HINTS UPON THE PREPARATION OF ZOOLOGICAL SPECIMENS.

BY H. HAUPT, A. M. PRINCIPAL OF OAKRIDGE SEM.

As the formation of a Museum, and the establishment of a general Cabinet of Natural History is an important object of the Linnæan Society of Pennsylvania College, it is presumed that a short article on the preparation of specimens may not be altogether unacceptable.

In presenting this essay to the readers of the Journal, the writer wishes it to be distinctly understood that he does not lay claim to any new discoveries or profess to teach a better mode than is taught or used by others; on the contrary, he is willing to confess that from his limited acquaintance with naturalists he has been unable to obtain any information on the subject: he, therefore, gives merely the result of his own experience, and a description of that method which he has found by trial to be most convenient, and will be much pleased if the defects of his system shall elicit a better essay from some one able to do the subject justice; in the mean time he will indulge the hope, that the perusal of this article will furnish the Students of Pennsylvania College with the means of adding very considerably to the collection of their Institution, and with a source of agreeable and profitable recreation to themselves.

The instruments and materials are few and simple. They consist of a knife, a small quantity of wire, a phial containing a mixture of arsenic and water, with a small brush for applying it conveniently to the skin, some raw cotton or tow, a small file and a gimblet or a sprig-awl.

The mode of operating is as follows: Suppose the subject to be a small animal, as a rat, or squirrel: make an opening at the lower end of the abdomen, detach the skin carefully from the hip, keeping the opening as small as possible, and when the finger can be passed entirely around the leg, cut it off at that joint which connects it with the body, draw it carefully out as far as the last joint to which the toes are attached, and cut it off—do the same with the other leg: next remove the muscles and vertebrae of the tail, which can generally be drawn out entirely. The posterior part of the body is now completely detached; proceed to strip the skin over the body, which can be readily done without increasing the size of the original opening, and detach it as far as the extremity of the muzzle. The ears should be taken off close to the skull, the eyes removed from the sockets. This done, cut off the head by a section through the back part of the skull, and remove the brains, tongue and muscles. Next apply the arsenic with a brush to the inside of the skin, giving a double portion to those parts from which the flesh may not have been entirely removed.

An artificial body must now be formed, and in this consists an important part of the process. The most convenient way of preparing it appears to be as follows:

1. Make a block of wood of such a size and shape as will completely fill the cavity of the skull, from which the brains have been removed; with a knife or chisel endeavor to give it such a shape that

when placed in the skull the whole together may have the exact shape and size of the head of the animal.

2. Measure exactly the length of the animal from the point of attachment of the cervical vertebrae at the back of the head to the root of the tail, and procure a wire of this length, make a hole in the block at the back of the head as nearly as possible at the point of attachment of the neck, and insert the end of the wire firmly.

3. Make two pieces of wood similar in size and shape to the shoulders and hips of the animal; bore holes through them sufficiently large to admit the wire with some difficulty, (if the holes are too large the blocks will not keep their places.)

4. Wrap the wires with strips of rags, cotton, tow, or some such material until the thickness becomes equal to that of the body of the animal, which should be kept before the operator as a guide. When this has been completed the skin may be carefully replaced, and the openings sewed shut.

At this period of the operation the specimen will present very little of its natural appearance, the body is misshapen, and the legs are not yet filled. To complete the process, the most convenient way for a beginner is to make small openings through the skin on the outside opposite the points at which the wires are to be inserted into the blocks: these openings can be afterwards closed without leaving a perceptible mark. Pass a piece of wire entirely through the leg, allowing it to project about an inch beyond the end of the claws: the upper end should be bent at a right angle, and inserted in a hole made to receive it in the block. To secure it firmly in its place a small staple made by bending about an inch of wire in the form of the letter **U**, can be driven into the wood, so as to embrace the former wire at a point about  $\frac{1}{2}$  an inch below its insertion. The legs can now be filled by pushing in small pieces of cotton with a stiff wire through the opening, and the tail can be adjusted in a similar way, by making an opening at the root on the upper side, inserting a wire and fastening it to the block, in the manner directed for the legs.

Before closing these small openings the work should be carefully examined, perhaps some parts may be found to require more filling. This can be done by means of a wire, with which portions of cotton can be pushed to the proper place, and if any part requires much addition, and is so situated that the material cannot be otherwise conveniently introduced, an opening may be made through the skin at that place.\*

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\* Of course it will be proper to make as few openings through the skin as possible; but the reader will please remember, that these directions are designed

Another important part of the operation consists in *shaping*, and here we would advise him, who has not much experience, to seek the assistance of a picture of the animal which he is preparing, which he will find of great use in enabling him to adjust properly the head, neck, legs, tail, &c., which, if not properly performed, may place his specimen in a very ridiculous and unnatural position. By means of the wires every part may be bent to its proper shape. If glass eyes cannot be procured pieces of painted wood may be used as a substitute, sometimes a dried bean or pea painted at the end will be found most convenient, but when nothing better is at hand, a piece of wood colored with common water colors, and varnished with gum Arabic, will answer. Lastly, the wires which pass through the feet, may be inserted into holes in a board, the hair smoothed with a comb or brush, and the work is then ready for the shelf.

In conclusion, we will observe that no instructions are equal to practice. The few directions which have been given may serve as a guide, but practice only can enable the young naturalist to prepare a specimen which he will be able to view with satisfaction. Let every one, then, who wishes to engage in this delightful art, and contribute to the reputation and usefulness of his *Alma Mater*, by creating for her a museum of Natural History which need be second to none in this country, procure the requisite materials and commence at once. Let him seize the first subject that is so unfortunate as to cross his path, divest it forthwith of its integuments, and after his recitations have been prepared (not before) proceed to operate—if unsuccessful in the first attempt, if the rat or squirrel happens to resemble on a small scale some of the fabled monsters of antiquity, or if it proves to be altogether a nondescript, let him not be discouraged, try again, “perseverance will insure success,” and he will soon find himself in possession of the means not only of spending an hour profitably, but also of contributing to the diffusion of scientific knowledge among his companions, and of increasing their taste for the study of the beautiful and interesting works of God.

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#### FACTS FOR MECHANICS.

*Filing of Saws.* It is perhaps less generally known than it ought to be, that the same saw is not equally well adapted to cutting *against* and *across* the grain of wood.

principally for those who have never perhaps attempted to prepare a specimen, and we therefore, give the easiest, without presuming to assert that it is the neatest or best way of accomplishing the object. A little experience will perhaps enable the operator to attach the legs without making openings expressly for that purpose on the outside.

To cut against the grain or for slitting boards, the teeth should be filed, holding the file at right-angles to (or straight across) the blade. In this manner the teeth will be formed like chisels, and be well suited to cut off the fibres of the wood in the direction of their length. The fronts of the teeth should also be made to *be square* with the blade.

To cut across the grain, as in cutting off a board and sawing fire-wood, the teeth should be filed to sharp points by holding the file a little aslant to the blade, changing the direction for every alternate tooth. In this way when the saw is *set*, the points will be in two out-side rows, and will cut off the fibres of the wood like knife edges, and permit them to be easily rubbed out by the inner part of the teeth.

It is now plain that a crosscut saw will not answer for slitting, nor a slitting saw for cutting across the grain. For speedy work every mechanic ought to have two saws, the one filed for crosscutting, and the other for slitting.

M. J.

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ANT-IANA, NO. I.

The last will and testament of an English duchess was attempted to be upset some years ago on the ground of her insanity, and, of course, her incompetency to bequeath her property. And what proof of insanity did her disappointed heirs produce? Nothing more, than that during her life time she was very fond of collecting and studying insects, and they argued that none but an insane person would engage in such pursuits!! This was many years ago, when people were not as wise as they are now, but I have no doubt that there are some even at present who would bring in a similar verdict.

I am insane enough to follow the inspired instructions of Solomon, when he says, "Go to the *ant*! consider her ways and be wise," and I sometimes feel mischievous enough to think that they are the most insane who wholly neglect this glorious book of nature, and thus slight the express precepts of the Redeemer of men and the example of many illustrious saints and sages of other times. I think I could be right eloquent on this subject, if you would allow me room, but ——"let us — go to the *ant*."

During the last summer, this numerous race of insects afforded me much amusement. Soon after a heavy shower of rain about the beginning of June, a large number of black ants, about one-third of an inch in length, was observed in the act of colonizing themselves in a flower bed, near the corner of the garden. It was a strange family, for they had not been seen previous to the rain. Numbers of emigrants were

constantly pouring in; some on foot, and some borne along by their companions. Some of the observers could not account for this singular mode of proceeding. The individuals thus carried did not seem weaker than their bearer, for when they were separated, they would both scamper off hastily; though sometimes one would again approach the other and allow himself to be picked up and borne off as before. The ants all came in a straight line, and were traced to a distance of twenty yards. At the place of destination, a scene of active and enterprising industry was going on. Some were excavating the earth, whilst others were bringing together straw and sticks. One little fellow was particularly noticed, tugging and twisting to drag along a stick eight or ten times bigger than himself. Every thing seemed to promise success to the enterprise, but on visiting the colony a few days afterwards, I observed that a large black ant of a different species had seized one of the settlers in a hostile manner and was bearing him off. After making his way with some difficulty through the grass that edged the bed, where his progress was impeded by his victim who grasped at the objects around him, he carried him into a hickory tree a few feet distant, which I found to be inhabited by a tribe of this large species.

On examining the settlement more closely, many dead bodies of both nations were discovered, giving evidence that a deadly struggle had been going on between them. A number of combats still remained undecided. In one instance, three of the smaller ants had attacked one large one, and from the exhausted appearance of all, I inferred that the contest had been arduous. In another, one of the giant invaders had seized his smaller opponent just at the root of the feelers and was endeavoring in vain, by rubbing him against the objects around, to get his body within reach of his jaws. His supple enemy evaded all his efforts. The colony appeared to have been much weakened by the hostilities of their powerful neighbors, for though they were still carrying on their operations, it was with much less energy than before, and since that time they have entirely disappeared; the remnant, I suppose, became disheartened and removed in hopes of finding a more peaceable neighborhood.

I have many more curious maneuvers of these little animals to relate.

RUSTICUS.

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A REJOINDER TO MRS. BUNN, WITH AN EPISODE ON THE CELESTIAL KITCHEN.

If Mrs. Bunn says, that the times before us, and particularly Roman times, of which she has read in an odd volume of Rollin, which lies on the third shelf of the small closet beside the fire-place in the back par-

lor, were superior to our own, I will admit it. But Mrs. Bunn, if she be an honest woman, and such I believe her to be, (she loaned me five dollars once and never asked it again,) must admit that, in point of eating, we are in advance of them.

The magnificent parade of nightingales' tongues was after, all, just as stupid as the idea of the man in Lessing, who thought a young lady would make a good wife, because she sung sweetly. The pearls dissolved in vinegar, the conger-eels fattened on the flesh of men, are as much proof of the sickliness as of the variety of imagination in the old gourmands. In the solid comfort of the matter we are far beyond them. Forks, which they had not, *are* preferable to fingers. We feel a slight shudder when Pliny speaks of sucking-puppies fricaseed, as a dish for the gods. Wo to our dandies if this taste should ever be revived! "Water-rats" closes a list of delicacies. The stomach, after all, was not so unfortunate a location of the soul.

The turkey was unknown. The enjoyment of roast goose must have always been disturbed by the reflection that perhaps they were devouring a descendant of the saviors of the city. O! that like happy effects attended the cackling of geese at the capitols of all republics. There was such a want of cleanliness, that the most refined were in danger of eating more than that portion of dirt, which the modern proverb has fixed with much precision at "a peck before you die."

Ambrosia, the food of gods, we are told in the Odyssey, was brought to Jupiter by pigeons. From this, the thought may be gathered that it was not unlike what in modern time we call "pigeons' milk."

But if this conjecture should not meet the approval of the learned, we will hazard another, for New England itself is hardly more the land of guessers than classic antiquity. As Jupiter both eat ambrosia, and applied it to his hair, for this we take to be an obvious explanation of the phrase, "ambrosial curls," we presume that it was not unlike pomatum, which, from its original place in mutton, when with mutton it may be eaten, comes to be used as an unguent for the hair. This shows the low state of domestic economy on Olympus. For from the hint I have thrown out, the intelligent reader may easily gather the extreme probability that the celestials were obliged to extract materials for their dinner and their toilet from the same pan. Hence, we submit with much humility, they deified that instrument under its own appropriate name. *Pan*, it is well known, was the god of shepherds, which you will observe, throws light on my suggestion in regard to the mutton. He was also fond of the pastoral pipe, an obscure legend touching which seems to be embodied in a well known line of a popular ballad,

"There's *music* in the fying *Pan*."

Perhaps some of the real causes of the quarrels of which the old poets tell us so much, might, if accurately traced, be found in the kitchen. If, by what I cannot but consider happy hints calculated to throw much light upon important and abstruse points, I have done nothing to secure to myself an eminent place among the learned; I have at least the proud consciousness of feeling that I have given myself claims upon the gratitude of many of our female domestics, by showing that the habit of dressing the hair over the fire where the dinner is cooking, has so sublime an origin.

H. O. R.

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### ENGLISH PHONOGRAPHY, NO. II.

BY PROF. W. M. REYNOLDS, OF PENNSYLVANIA COLLEGE.

Various attempts have been made to remedy the irregularities and imperfections of English Phonography. The practical character of this country especially manifested itself in this direction even cotemporaneously with our revolution. Dr. FRANKLIN, interested in this subject both as a printer and as a philosopher, proposed to reform our alphabet by rejecting the six letters *c, j, q, w, x* and *y*, which he considered superfluous, and introducing in their places six new characters to express the sounds for which we have no peculiar signs. Though FRANKLIN was not a philologist, his knowledge even of French being very limited, so great was his genius, and so strong his common sense, that he undoubtedly possessed high qualifications for this work; but as it is one which requires a large expenditure of both time and patience in order to carry it through, and as so little had at that time been done in English Phonology (or the analysis of our spoken language) it is not strange that, amid his numerous engagements in philosophy, politics and philanthropy, that great man failed to do all that was necessary, and finally abandoned the enterprise. It is not necessary to enter into an examination of the causes of this failure, nor shall we do this in reference to any other plans that have been proposed, believing that the establishment of a good system will be all that is required to show the insufficiency both of that which is now in use, and of others which have been proposed as substitutes for it. Gratitude, however, does not allow us to pass over the labors of NOAH WEBSTER in silence. His "Dictionary" is an imperishable monument of his learning and a miracle of industry, and the reforms which he has succeeded in introducing into our Phonography in spite of the incessant carping of pedants and other men of contracted minds, are both important in themselves and prepare the way for others more thorough and extensive. It is true that WEBSTER was

not always consistent, or true to his own system in those illustrations which he gave of it when he first proposed it, but this does not subvert the principles which lie at the bottom of it.

*Dr. Thornton*, whose "Cadmus" was published in 1793, *Ewing*, whose "Columbian Alphabet" appeared in 1798, and more lately *Kneeland* and *Antrim*, whose works I have not seen, deserve to be mentioned for their zealous labors in this direction, though none of them seem so likely to make an impression upon the public as the late *Thomas S. Grimké*, whose adoption and use of *Webster's* plans in their simplest form would undoubtedly have commended them to the public, had he not been so suddenly cut down in the midst of his usefulness.

Without saying any thing of various other systems of Phonography of which I have heard, but which, except those of *Wachter* and *Wilkins* upon general Phonography, I have not seen,\* I proceed to unfold my own plan, believing that the long continued and now simultaneous and independent movements in this direction show that, in this country at least, a reformation of the English alphabet and spelling must, ere long, be effected.

The fundamental principles upon which I proceed are the following :

I. No changes should be made but such as are absolutely necessary, reference being had, however, as well to the general usage of the other languages with which the English is so intimately connected, as to convenience in the acquisition of our language by foreigners and of their's by us.

II. Each simple, elementary sound of our spoken language must be indicated by an appropriate sign or letter.

III. Compound or modified sounds (diphthongs, &c.) may be represented either by a combination of letters or by a single letter.

IV. Each letter or combination of letters must invariably represent the same sound, and must always be vocal.

In accordance with these views we propose the following scheme of an English Phonographic Alphabet :

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\* Whilst I am writing, *Prof. Haldeman* (having seen my first article upon Phonography) has favored me with a sketch of his system of "General Phonography," of many useful hints in which I gladly avail myself.—By last night's mail, (Dec. 23,) I also received a Boston newspaper, in which I find the following notice: "PHONOGRAPHY.—Classes in Phonography are now commencing for the winter at the Phonographic Institution—Phonography is now thoroughly established as a regular branch of education, especially in England." This is the first intimation which I have seen of these facts, and the coincidence of the name at least, with that of which I had supposed myself the inventor, is rather remarkable.

## PHONOGRAPHIC ALPHABET.

1. **A**=a, in *art, far*; aa, in *baa*; ah, in *ah!*; au, in *aunt*; ea, in *heart*; o, in *God*. This is the German a, in *Vater*.
2. **V**=a, in *an, hare*; ai, in *fair*; e, in *where, there*; ea, in *pear, bear*; ei, in *heir*. Nearly the Ger. a, in *Gatte*.
3. **Λ**=a, in *all*; au, in *author*; aw, in *awful*; o, in *or*; ough, in *ought*, (it somewhat shorter in *cough, trough*.) This sound is a little broader than the Ger. aa, in *Aal*, or ah, in *Wahl*.
4. **E**=a, in *name, fame*; ai, in *paid*; ao, in *gaol*; ay, in *pay*; ea, in *great*; ei, in *vein*; ey, in *grey*. The Ger. e long, as in *beben*.
5. **Ξ**=e, in *end, bet, tell*; a, in *surface*; ai, in *again*; ea, in *head*; eg, in *phlegm*; ei, in *heifer*; eig, in *foreign*; eo, in *leopard*; ie, in *friend*; u, in *burial*. The Ger. e, in *Henne, fect*.
6. **I**=i, in *marine*; e, in *evil, scene*; ae, in *Caesar*; ea, in *sea*; ee, in *see*; eg, in *impregn*; ei, in *seize*; eo, in *people*; ey, in *key*; oe, in *oconomy*. The Ger. e long, in *Elisa*, or ie, in *sieh, hier*.
7. **I**=i, in *pin, it, bit, simile*; ai, in *villain*; e, in *catastrophe*; ea, in *guinea*; ee, in *committee*; ei, in *surfeit*; oy, in *buoy*; u, in *busy, business*; ui, in *build*; y, in *very, mystery*. The Ger. I, in *Ich, Sinn, Mittel*.
8. **!**=i, in *pine, mine*; ie, in *die*; igh, in *high*; y, in *tyrant*; ye, in *dye*. Ger. ei, in *mein*.
9. **O**=o, in *no, so, cold*; eau, in *beau*; ew, in *sew*; eo, in *yeoman*; oa, in *groan*; oe, in *doe*; oh, in *oh!*; ol, in *yolk*; oo, in *door*; ot, in *depot*; ou, in *mould*; ow, in *flow*; owe, in *owe*; ough, in *dough*. Ger. o, in *Noth, Brod*.
10. **O**=o, in *done, son, above*; e, in *herd*; ea, in *learn*; i, in *bird, fir*; oo, in *flood*; ou, in *rough, covetous*; ow, in *narrow*; u, in *sun, dull*. Ger. o, in *Gott, Bottich*.
11. **U**=u, in *rule*; o, in *move*; oe, in *shoe*; oo, in *fool*; ou, in *tour*; ough, in *through*; ue, in *sue, accrue*; ui, in *suit*. Ger. u, in *Muth*.
12. **Λ**=u, in *bull, pull*; o, in *wolf*; oo, in *hoof, cook*. Not unlike the Ger. u, in *null*, or o, in *Rock*.
13. **W**=w, in *we*. 14. **B**=b. 15. **⊙**=ch, in *church*. 16. **D**=d.
17. **F**=f. 18. **G**=g, in *gag*. 19. **Ʒ**=g, in *gem*; j, in *jag*.
20. **H**=h, in *he*. 21. **J**=y, in *yet*; i, in *union*. The Ger. J (cons.) in *Jude, Ja*.
22. **K**=c, in *cat*; k, in *kind*; ch, in *character*. 23. **L**=l. 24. **M**=m.
25. **N**=n. 26. **8**=n, in *finger*; ng, in *sing*. 27. **P**=p. 28. **R**=r.
29. **S**=s, in *sin, hiss*; c, in *cent*. 30. **T**=t. 31. **⊥**=th, in *thin*.
32. **V**=v. 33. **Z**=z, in *zest*; s, in *his*.

The letters C, Q, X and Y are rejected, the first three as superfluous, and the Y on account of its unsettled power in English as well as in other languages. Y and C are used in their inverted forms in which there does not appear to be any danger of misunderstanding, on which account they and the others are rejected in their ordinary forms. The sound of *u* in *tube*, *usage*; *iew*, in *view*, &c. is supplied by *ju*.

The diphthongs *oi* and *oy* as in *toil* and *cloy* will, of course, be expressed by *oi*, and *ou* and *ow* as in *foul* and *fowl* by *au*, according to the analogy of the German.

The combinations *sh*, *th*, (as in *the*) *wh* and *zh* and their analogues are retained or introduced, because their force is well ascertained and easily understood, and it is not, in my opinion, desirable to burthen the alphabet with any thing that can be spared. *Ng* would have been treated in the same way, had it not been for such combinations as *finger*, which it might be inadvisable to write *fingger*, in consequence of the danger of mistakes in the pronunciation.

The formation of new characters by inverting those in common use (first suggested by *Ewing*, I believe,) seems to me equally convenient for the learner and for the printer. At the suggestion of *Prof. Haldeman*, I substitute 3 (the numeral) (inverted) for  $\text{Æ}$ , and 1 for the short sound of I. I have also used  $\text{O}$  and  $\text{A}$  in accordance with his system of general Phonography, of which I propose in my next article to communicate the sketch with which the author has so kindly favored me, as it so ably illustrates my own views upon this subject, in which I have been confirmed by the authority of a scholar who shows himself so perfectly familiar with the subject. I cannot here forbear the expression of the hope, that the Am. Philosophical Society, to which *Prof. Haldeman* has communicated his system at length, will speedily favor us with its publication.

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### METEOROLOGY, NO. III.

BY PROF. JACOBS, OF PENNSYLVANIA COLLEGE.

*What is the physical cause of these phenomena?*

Having stated some facts in Meteorology, and traced what is presumed to be the law by which they are governed, it now remains to assign, if possible, their physical cause.

1. The remarkable coincidence between the periods of the lunar changes and those of the weather at once compels us to inquire, what agency the moon may have in the production of the latter changes. The necessity becomes the more imperative, as no other class of physi-

cal phenomena is known whose period coincides in so remarkable a manner with either of these as they do with each other. This circumstance *may* be entirely accidental; but it is not probable that it is so; for in physics such coincidences, after due investigation, are always found to result from a more or less intimate relationship, such as a common cause, or as one being the cause and the other the effect.

2. The opinion, that the moon in its different positions in reference to the earth and sun may be the cause of those modifications of the condition of the atmosphere which give rise to cloud, rain, snow, and fair weather, is not new. The idea is extensively prevalent in the community that the changes of the weather are produced directly or indirectly by the lunar influence. Hence such changes are often confidently looked for at the times of new and full moon, and at its first and last quarters. And further, at the times of new and full moon, but particularly the latter, frosts and cold weather are almost uniformly experienced in our latitude, except perhaps during several of the summer months. During the last summer the times of full moon were all cool and bracing, and the nights clear and brilliant. Why *this* should be so, may perhaps at some convenient time be considered.

3. But it has been objected by some that, as the weather rarely ever changes at the precise time when the moon is new or full, or at the quadratures, or at the octants, but generally a day or a day and a half earlier or later, the latter can have very little influence over the former. Great stress has been laid upon this objection; and it has been regarded by those, who have entertained it, as at once deciding the question in their favor. At this point we might aid them by stating a second objection, much more plausible, and therefore, more weighty than the one just named. It is known, that the change from clear to cloud and vice versa, happens at different times in different places on the same meridian. The careful study of meteorology, and the multiplication of observations have moreover proved that it occurs in low always sooner than in high latitudes, and that it is regularly progressive from the tropics towards the north, and north of east in the northern, and towards the south and south of east in the southern hemisphere. Its occurrence in the lower latitudes is always several days earlier than in the higher. This, it might be said, does not look much like an effect of the lunar action, which ought to be exerted nearly at the same time at all places upon the same meridian, and always most powerfully in the latitude corresponding to its declination.

These objections, and others of a similar character which might be urged, though plausible, do not however, in our opinion, militate against

the opinion that the moon is the principal cause of the changes of the weather under discussion, but go directly in favor of that opinion.

4. In order to estimate correctly the lunar influence, we must not forget that our atmosphere is subject also to the action of the sun's attraction and the powerful influence of his rays.

Independently of the influence of both these bodies, the atmosphere would revolve uniformly with the earth, and be subject to no change whatever. There would be a general stagnation—a continual sameness—none of the vicissitudes which at present characterize the weather.

Now suppose the solar influence alone to exist: what change would this produce? We should see the great system of atmospheric circulation at present existing, at once springing into being. This may be concisely explained as follows: The absorption of the sun's rays by the surface of the earth, by which the air immediately resting upon it is heated and rarefied, will produce *diurnal* changes of great extent. The *unequal absorption* by different portions of that surface will produce local disturbances in density and pressure resulting in local currents or winds. And the *greater absorption* within the *tropics and low latitudes*, will cause a determination of the lower mass of the atmosphere in both hemispheres towards the equator, and of the upper mass towards the poles. The *lower* or polar current, which, by continually passing over portions of the surface of the earth whose velocity of rotation is greater than its own, is constantly left behind them by the difference of their several velocities, is gradually turned in a curve westward, and in the latitude of about  $30^{\circ}$  becomes the north-eastern trade wind, on the northern, and the south-eastern trade on the southern side of the equator. The *upper* currents, having a greater velocity of rotation than those portions of air through which they successively pass in their departure from the region of the trades, are constantly tending more and more eastward, until, in the latitude of about  $50^{\circ}$ , they become almost east. These currents, leaving the torrid zone with a high temperature, and consequently holding a large quantity of watery vapor in solution, gradually lose their elevated temperature, and deposit their moisture in their progress towards the poles. To these currents, then, we ought to look as the great treasuries of cloud, rain and snow; and their course ought to be the great track of our extended storms.

But in naming cloud, rain and storm, we have insensibly passed beyond the immediate effect of the solar influence. If the sun were the *sole* disturber of the atmospheric equilibrium, it is but fair to assert, that every day would be nearly alike in reference to cloud and rain; for the

effect of the sun's heat would only be to produce daily fluctuations of temperature, and the changes of the seasons.

5. Next let us suppose the moon also to act upon the atmosphere. Its action cannot be one of calorific influence, by which a general *lunar* circulating system is produced like that produced by the sun. It is one purely of attraction. It can only exert a modifying influence upon the results of the solar action—its effects are only of a minor nature superinduced upon those of the sun.

If the moon did not exert a strong attraction upon the atmosphere and thereby disturb its condition, the laws of nature would be subject to a strange irregularity. We would witness the singular fact of a very marked influence exerted upon the more distant, the heavier, and the less movable waters of the ocean, producing tides of considerable magnitude; and at the same time no effect produced on the nearer, the lighter, and the extremely movable mass of the atmosphere. Such a supposition is unphilosophical and absurd. There must, from the necessity of the case, be both solar and lunar tides in the atmosphere, of which the latter must, however, be by far the greater. It is indeed true that these tides are not easily recognized by any difference of pressure produced at the earth's surface, as might at first view be expected. But then it must be remembered that the solar heat exerts such an all-controlling power in producing changes of pressure, currents and counter-currents, as almost to conceal the lunar tides, if there be any. These, being mixed up with the more powerful movements due to changes of temperature, can do no more than modify or change in a subordinate degree the condition of the atmosphere as influenced by the solar heat. It is these modifications or superinduced changes which give its existing character to the weather.

That these changes should not occur at the precise time at which the moon reaches any particular position is to be expected, since even the tides of the ocean follow at some distance the moon in its diurnal course; and that they should be influenced by local circumstances is likewise to be expected, since the latter are also influenced and modified, and sometimes even entirely destroyed by the situation and outline of sea coast. This is a sufficient answer to the first objection above stated. The second objection is answered by a consideration of the fact, that, as the lunar action is but a modifying influence, inducing upon the great circulating system produced by the sun, certain minor changes, these changes must be carried forward in that general circulation. If, therefore, a change is produced by the moon in the region of the trades, or of its own declination, by which cloud and rain are produced, that change

will be swept along by the great tropical streams towards the poles, and will visit the different latitudes successively as do the storms of rain, and many other changes of the weather. Nor must we forget to take into the account the strong local agency of islands, coasts, and soils upon the air, by which also every atmospheric disturbance is greatly modified.

The conclusion seems, therefore, to be quite as probable as any other that has yet been offered, that those regular changes of the weather under discussion are produced by the influence of the moon upon our atmosphere.

*Gettysburg, Dec. 24th, 1844.*

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#### INTRODUCTORY ADDRESSES,

Delivered at the Commencement of the Course of Instruction in the Medical Department of Pennsylvania College, Philadelphia, November, 1844.

The Medical Department of Pennsylvania College, Gettysburg, is located in the city of Philadelphia. It has recently been re-organized under very flattering prospects. The faculty is now complete, and the various branches of medical science provided with instructors, known to the profession and the public, and known as honorable and high minded men, qualified by their talents and education to instruct students of medicine in the important science of curing disease. These addresses, four in number, are creditable to their authors, as literary performances, and each one discusses an important theme. It is small praise to say, that every professor has accomplished his task with ample learning and in an instructive and judicious manner. The lecture\* of Dr. DARRACH, who occupies the chair of Theory and Practice of Medicine, is a learned disquisition in the history of medical science, and the true basis of medical philosophy. Maintaining that the science is founded in observation and induction, and not in ingenious speculation without sufficient data, it shews that, from the time of Hippocrates, the father of medicine, *ad nostra tempora*, those who have trod in his footsteps, and worshipped at the shrine of nature, have rendered by their discoveries the most essential service to science, whilst the visionary and speculative, led on by the celebrated Galen, have dazzled and been adored, but their reign was not perpetuated. Truth would seem to be led captive—when sought by the Baconian, or Hippocratic method—as well in medicine, as in physics and metaphysics.

It is difficult to repress an expression of regret, that a discourse so elaborate and beautiful, should have suffered so seriously in the hands of

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\* Introductory to the course of Theory and Practice of Medicine.

the printer. He has surely done great injustice to the orthography of the proper names which are found in the discourse.

The second address,\* and we may not be very orthodox in the order in which we introduce them, is by Dr. WASHINGTON L. ATLEE, Professor of Chemistry. The utility of this attractive and rapidly growing science, is exhibited with a clearness and fullness, calculated to convince the student that it cannot be dispensed with, and at the same time to shew, that the Dr.'s "Stand-point" is the right one, and that he cannot fail, carrying out his own principles, to be an acceptable and profitable teacher.

His views in regard to the propriety of directing the attention of students more particularly to those branches of Chemistry which will be of most importance professionally, whilst no part is neglected—commend themselves by their truth. If the introductory is to be regarded as a sample of the Dr.'s style of lecturing, it may reasonably be inferred that the muses will often lend their ornaments to relieve the dryness of copious statements of facts.

Why should he not thus enliven his subject? He has a delightful field over which to expatiate. Imagination may occasionally kindle and pour forth her treasures to illustrate the "miracles of God." No apprehension need be indulged that the chemistry of the medical department of Pennsylvania College will be too poetical. It is easy to see, that the intellectual in the Dr.'s mind is not overshadowed by the imaginative.

The third address† is by Dr. D. GILBERT, Professor of Surgery. The subject is well chosen. It is self-confidence, that most essential requisite to him, who must encounter the most frightful forms of human woe, perform the most vital operations often without the aid of his sight, meet crises creating in every bosom irrepressible alarm, without delay—snatch life as it were by a quick but intelligent grasp, or let it flit away for ever. The subject is treated in a very judicious manner, and is full of counsel, deeply to be pondered by all concerned, and in a style which, and we consider it high praise, does not render it necessary to extract, as it were by a forceps, and with violent pulls—the Dr.'s meaning. The man who lectures in this way must be a profitable teacher.

The fourth address‡ is by Dr. PATTERSON, to whom has been committed the management of the *Materia Medendi*, and we think that any department committed to such hands would have been skillfully man-

\* Introductory to the course of Medical Chemistry.

† Introductory to the course of Principles and Practice of Surgery.

‡ Introductory to the course of *Materia Medica* and Pharmacy.

aged. The whole tone of this performance indicates a quick and comprehensive mind, and speaks that this is a man who will be felt in his day. We take it for granted that he is right in all that he says—it is obvious that he refers to great abuses of a valuable source of medical knowledge—but however valuable clinics are, and valuable must be that instruction which may be obtained at the bedside—let there be nothing unfeeling or cruel, nothing indelicate or offensive, in our treatment of our fellow men when they are the victims of disease.

It is a gratification to us to observe that Dr. Patterson is conversant with the German language. He cannot fail to derive from it the highest aid in his scientific studies, for who—in science of every description—have surpassed the men of the “Fatherland?”

May it not be hoped, that this rising institution will continue to prosper, that it will receive the patronage of the friends of Pennsylvania College, and that it will contribute essentially to supply the United States with able *Medicinæ Doctores!* Without the gift of prophecy, we venture to predict, that it will go forward—that every year will add to the number of its students, that it will make for itself a name, and that its teachers will rank with the benefactors of our race.

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#### ALUMNI ASSOCIATION OF PENNSYLVANIA COLLEGE.

This Association holds its annual meeting on the evening preceding the College Commencement. The last meeting was numerously attended, representatives being present from nearly all the graduating classes. Rev. Theophilus Stork, of Philadelphia, presided, and Prof. Stoeber acted as secretary. The Association being organized, the death of Rev. W. A. Wadsworth, was announced by A. R. Stevenson, Esq., and the following resolutions unanimously adopted:

1. “*Resolved*, That we sincerely lament the loss which the Association has sustained in the death of brother Wadsworth, whose moral worth and personal qualities will long be held in affectionate remembrance.”

2. “*Resolved*, That we deeply sympathize with the relatives of the deceased, in their bereavement, but unite with them in gratitude to our Heavenly Parent, for sustaining him in the trying hour, by the all-powerful consolations of an unshaken faith, and affording him a peaceful and triumphant death.” Rev. Jno. Heck, Prof. Hay, and Rev. N. H. Cornell were appointed a committee to communicate the foregoing resolutions to the family of our deceased friend.

In behalf of the committee appointed at a previous meeting, to propose a plan by which pecuniary aid might be afforded to our Alma Mater,

Rev. Geo. Diehl, of Easton, Pa. read an interesting report, but its consideration was postponed until next meeting, in consequence of exertions now making by the students of the College, to erect a Hall for the *Linnæan Society*, and a resolution was adopted cordially approving of the enterprise contemplated, and a willingness expressed to co-operate with them in the effort.

The officers elected for the ensuing year are, Rev. *Jno. Heck*, President; Prof. *M. L. Stoeber*, Secretary; Mr. *Wm. Ruthrauff*, Treasurer.

The orator for the next Anniversary is Rev. *C. P. Krauth*, of Baltimore, Principal; Dr. *C. L. Baker*, of Lancaster, Alternate.

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#### TO THE ALUMNI OF PENNSYLVANIA COLLEGE.

We desire to make the Journal the organ of communication between the Alumni of Pennsylvania College and the literary and scientific world. Not that we expect that they will make this the exclusive recipient of their efforts in this direction, but that they will here, from time to time, as it were, report progress—let their old friends know what they have been doing and how they are getting along—what use they are making of “*omnia jura privilegiaque*” of literary and scientific men, with which their diplomas and subsequent college honors have invested them. If we can succeed in this, we expect to render a service equally acceptable to our readers and to the graduates themselves. To the former it will secure a rich variety of original and instructive matter, which we are satisfied that the members of the various classes that have left Pennsylvania College within these 15 years are as well able to furnish them as any similar body of scholars in the country. To the Alumni themselves it will be productive of results more pleasing, if not more profitable. They will here re-unite once more, at least in spirit. They will recognize the style and the sentiments, the manner and the matter of old friends and class-mates with whom they once “took sweet counsel,” when mind coming into collision with mind was like “iron sharpening iron,” which has now become fine and polished as a Damascus blade, or, at least, as useful and effective as the axe of our western woodsmen. It will thus be a bond of union, a place of re-union, and a means of making friendship and fellowship as lasting as life. We mean these remarks to apply likewise to those who have received honorary degrees from Pennsylvania College, who are at least her adopted children.

We also extend this invitation to that numerous class of students who were here matriculated and sojourned for a shorter time within the enchanted circle of college-life, but were, by various causes, withdrawn

from it before they could make its regular round. We know many of them to be possessed of fine talents and active minds, and highly respectable literary and scientific attainments. We know too, that hundreds of them are zealous in promoting the honor and interests of Pennsylvania College, and we are anxious to secure their co-operation both in the general objects of the Linnæan Association, and in the literary support of the Journal.

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**HONORARY DEGREES.** In announcing the honorary degrees conferred at the late Commencement of Pennsylvania College, we had to trust to our memory, which played us false so far as to permit us to omit the name of REV. S. W. HARKEY, of Frederick, Md., upon whom the degree of A. M. was conferred. It is superfluous to say that Mr. H. who is the author of several excellent works, particularly "The Church's best state," is every way worthy of the honor.

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**ENLARGEMENT.** Our readers will perceive that the present number of the Journal is enlarged so as to exceed its original size by *one-third*. This is in consequence of the spirited proceedings of the Linnæan Association at its late meeting. Our subscribers and friends will understand from this, that we are disposed to do even more than we have promised, and we assure them, that it is our earnest wish and determination to give them the full value of their money, which, however, is a very small matter. But if the Alumni of Pennsylvania College, now near a *hundred*, and the matriculated students who have been connected with the Institution for a longer or a shorter time, now but little under *one thousand*, and the large body of friends who have for these fifteen years so steadily sustained the interests of literature and science at this place, will give us reasonable encouragement and assistance, we think that we shall finally be enabled to make our Journal not only one of the cheapest but also one of the most valuable publications in this land of newspapers, magazines, and journals.

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**TO CORRESPONDENTS.** As we are just getting fairly under way, and have to depend entirely upon their favors, (it being our determination to keep the matter of the Journal entirely original,) we shall be placed under increased obligations by our Correspondents if they will forward us their articles somewhat more promptly, and earlier in the month. We have received several communications which we were anxious to insert in the present number—but they came too late.



# Pennsylvania College, Gettysburg, Pa.

## FACULTY AND INSTRUCTORS.

- Rev. C. P. KRAUTH, D. D.—*Pres't and Prof. of Ev. of Christ., Moral Science, &c.*  
Rev. H. L. BAUGHEB. A. M.—*Prof. of Greek Language, Rhetoric, &c.*  
Rev. M. JACOBS, A. M.—*Prof. of Mathematics, Chemistry, &c.*  
Rev. W. M. REYNOLDS, A. M.—*Prof. of Latin, Mental Philosophy, &c.*  
M. L. STOEVER, A. M.—*Prof. of History and Principal of Preparatory Department.*  
Rev. CHAS. A. HAY, A. M.—*Prof. of German Language and Literature.*  
DAVID GILBERT, M. D.—*Lecturer on Anatomy and Physiology.*  
Rev. J. G. MORRIS, D. D.—*Lecturer on Zoology.*  
WM. ALBAUGH, A. M.—*Tutor and Teacher in Preparatory Department.*  
MR. H. R. GEIGER.—*Teacher of Writing.*

## MEDICAL FACULTY AT PHILADELPHIA.

- WM. DARRACH, M. D.—*Prof. of Theory and Practice of Medicine.*  
JOHN WILT BANK, M. D.—*Prof. of Obstetrics and Diseases of woman and children.*  
WM. R. GRANT, M. D.—*Prof. of Anatomy and Physiology.*  
H. S. PATTERSON, M. D.—*Prof. of Materia Medica.*  
D. GILBERT, M. D.—*Prof. of Principles and Practice of Surgery.*  
W. L. ATLEE, M. D.—*Prof. of Medical Chemistry.*

PENNSYLVANIA COLLEGE has now been chartered about fourteen years. During this time its progress has been such as to gratify the most sanguine expectations of its friends. The course of studies is as extensive and substantial as that of any Institution in the Country. The *Preparatory Department* provides for instruction in all the branches of a thorough English, business education, in addition to the elements of the Mathematics and Classical Literature. The *College Course* is arranged in the four classes usual in the Institutions of this country.

The government of the students is as energetic as their circumstances seem to require. They attend at least two recitations a day, Church and Bible Class on the Sabbath, and are visited in their rooms so frequently as to preclude the danger of any great irregularities. It is believed no Institution in the United States has more exemplary young men in connexion with it. They are all required to lodge in the College Edifice, special cases excepted.

The annual expenses are—for board, tuition and room-rent, during the winter session, \$61 87½; for the summer session, \$41 87½. Washing, \$10 00; and Wood, \$3 00. Total expense, \$116 75. Boarding can be obtained in town at \$1 25 per week.

There are two vacations in the year, commencing on the third Thursdays of April and September, and each of five weeks continuance.

The winter session commenced on the 24th inst., with the accession of about twenty Students in the Freshman Class, admitted at the close of the summer session, and a respectable number of applicants for admission into the Preparatory Department.

## Acknowledgements of Donations to the Cabinet of the Linnean Association of Pennsylvania College.

Jan. 1, 1845. Received from *Prof. Haldeman*, of Columbia, Pa., several numbers of his "*Zoological contributions*," comprising essays "on the impropriety of using vulgar names in zoology;" "on the arrangement of insect cabinets;" "on some American species of Hydrachnidæ."

From *Rev. Solomon Oswald*, of York, Pa., a fine specimen of Haematite.

From *Dr. Jacob Hay*, of York, Pa., larvae of the *Oestrus equi*.

From *Mr. Wm. Wagner*, seal Engraver, York, Pa., sixty-nine plaster impressions of seals. Through *Prof. Charles A. Hay*.

VOLUME I.]

[NUMBER 4.

THE  
**LITERARY RECORD AND JOURNAL**

Of the Linnaean Association of Pennsylvania College.

FEBRUARY, 1845.



CONDUCTED  
By a Committee of the Association.

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1½ sheet, periodical—Postage, 100 miles 2½ cents, over 100 miles 3½ cents.

NEINSTEDT, PRINTER, GETTYSBURG.



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CONTRIBUTIONS TOWARDS A CATALOGUE OF THE TREES AND  
SHRUBS OF CUMBERLAND COUNTY, PA.

BY SPENCER F. BAIRD, OF CARLISLE, PA.

In no instance is the close connection between the various departments of nature more clearly shown, than in the relation which the geological structure and general features of any portion of land, bear to its flora. If for any locality certain data are given, such as the latitude, soil, and position relative to other objects, we can in almost every instance determine beforehand, what species of the vegetable kingdom will there be found. The various alternations of moisture and dryness, sun and shade, mountain and valley, have each their peculiar attendants.

Briefly to characterize Cumberland County, it consists of a section of the great Cumberland valley, 12 miles wide and about 40 long, bounded on the north by the Kittatinny or North mountain, on the south by the South mountain, and on the east by the Susquehanna river. The South mountain is composed of the various primary rocks, gneiss, mica slate, hornblende, chlorite, quartz and sandstone, the white fucoidal sandstone of Prof. Rogers forming its northern ridges. Next come the two great strata of limestone and slate, occupying nearly the whole breadth of the valley. The North mountain consists of red and white sandstones, and shales. A narrow dyke of trap called stony ridge, crosses the valley, about five miles east of Carlisle. The Conedoguinot creek forms the dividing line between the limestone and slate. Nearly parallel to the Conedoguinot, and at a short distance from the South mountain, runs the Yellow Breeches. The remaining streams which are of insignificant size, are the Letart, and Big Spring.

The fertility of the soil varies much in different parts of the County. In the South mountain there is not a great deal of arable land. The limestone soil, however, is capable of a very high state of cultivation, particularly near the water courses. In some of the bottoms along the

Conedoguinot creek, the timber grows to a very large size. It is not uncommon to see Buttonwoods seven feet, Mossycup oaks five feet, and Hackberries two feet in diameter, Grape vines, and the *Viburnum prunifolium*, 6 to 8 inches. About 7 miles to the south-west of Carlisle, there is a strip of woods called the Richlands, containing trees of an astonishing diameter and height, so high indeed that it is considered an almost impossible feat to kill a squirrel or wild pigeon on the top, with shot. The slate land is very unproductive compared with the limestone, though by good management it affords a tolerable yield. The North mountain is very rocky along its sides, fertile, however, on parts of its top.

The most peculiar part of the County consists of that portion of it in the South mountain. This is not a single range like the North mountain, but occupies an area of considerable breadth, made up of short hills and ridges, separated by narrow vallies, and copiously supplied with springs and swamps. In these latter, we find the Cranberry and fragrant *Magnolia* growing in abundance, particularly in one called the Black Swamp, near Pinegrove furnace.

By a comparison of this list with that contained in Darlington's *Flora Cestrica*, it will be found that many of our species of oak, maple, cherry, currant, hazel, &c. are wanting in Chester County. Others common here, are rare there. Again, there are a few found there in which we are deficient. Of these latter the majority will most probably be found hereafter, as the species named below are the collection of a single season, and of a single individual. Several still remain undetermined, for want of satisfactory specimens. It will be observed that the whole genus *Salix* is omitted, the collection having been commenced too late in the spring to get them in flower.

The nomenclature employed is principally that of Torrey and Gray, in the *North American Botany*, Torrey in the *Report on the plants of New York*, and in some instances Darlington in the *Flora Cestrica*. We add the synonyms of this latter work, when they differ from the name we have adopted.

*Acer pennsylvanicum*, L. Striped maple. Rare in North and South mts.

“ *saccharinum*, L. Sugar maple. Meeting house Springs.

“ *dasy carpum*, Ehrh. *A. eriocarpum*, (Mx.) Darl. Silver maple. Abundant along creeks.

“ *rubrum*, L. Red maple. Abundant in mountains and along creeks.

*Alnus incana*, Willd. Black alder. Rare. Pinegrove, South mount.

“ *serrulata*, Willd. Red alder. Abundant along shaded rivulets.

- Amelanchier canadensis*, Torr. & Gray. Service berry.  
 var. 1. *botryapium*, Torr. & Gr. *A. botryapium*, Darl. Abund.  
 var. 2. *rotundifolia*, Torr. & Gr. *Am. ovalis*, (Lind.) Darl.  
 Rare. Spring Forge.
- Ampelopsis quinquefolia*, Mx. *A. hederacea*, (D. C.) Darl. American  
 ivy. Abundant. Fences and rocky places.
- Andromeda paniculata*, Mx. *A. ligustrina*, (Muhl.) Darl. Moist thick-  
 ets of South mountain.
- Betula lenta*, L. Sweet birch. Abundant in the mts. Rare in the vall.  
 “ *nigra*, L. Black birch. Abundant along Susquehanna.  
 “ *excelsa*, Ait. Yellow birch. One tree found in North mountain.
- Carpinus americana*, Mx. Iron wood. Along Yellow Breeches. Com.  
*Carya alba*, Nutt. Shell bark. Abundant.  
 “ *tomentosa*, Nutt. “ Abundant.  
 “ *porcina*, Nutt. Pig nut. Abundant.  
 “ *amara*, Nutt. Pig nut. Abundant.
- Castanea vesca*, var. *americana*, Mx. Chestnut. Abundant in North  
 mountain, less so in South.  
 “ *pumila*, Mx. Chincapin. Abundant in South mountain.
- Ceanothus americanus*, L. Abundant in close woods.
- Celastrus scandens*, L. Along fences. Common.
- Celtis occidentalis*, L. of Michaux and Darlington, not of Torrey. Hack-  
 berry. Rocky banks near water. Rare.  
 “ *crassifolia*, Lam. of Mx. and Darl. not of Torrey. Hackberry.  
 Rich soil along Conedoguinet. Common.
- Cephalanthus occidentalis*, L. Abundant in wet meadows.
- Cerasus pennsylvanica*, Lois. Top of North mountain at Wagoner's gap.  
 “ *virginiana*, D. C. *C. obovata*, Darl. Wild cherry. Abundant.  
 “ *serotina*, D. C. Wild cherry. Abundant.
- Cercis canadensis*, L. Red bud. In rich soil along the creeks.
- Comptonia asplenifolia*, Ait. Sweet fern. Abundant on dry ridges of  
 North and South mountains.
- Cornus sericea*, L. Red rod. Abundant in moist thickets.  
 “ *alternifolia*, L. Abundant near the creeks.  
 “ *florida*, L. Dog wood. Abundant in woods near creeks, and mts.  
 “ *paniculata*, L. Herit. Bush dogwood. Abundant, near water.  
 “ *circinata*, L. Herit. Rare. Top of North mountain.
- Corylus rostrata*, Ait. Beaked hazel. Rare in North mountain.  
 “ *americana*, Wald. Common hazel. Damp, shaded spots. Com.
- Crataegus parvifolia*, Ait. Rare in woods.  
 “ *flava*, Ait. of Darl. not of Torr. & Gr. Rare—along Y. Breeches.

- Crataegus punctata*, Jacq. of Darl. Abundant along Conedoguinnet.  
 “ *crus galli*, L. Common thorn. Abundant along the streams.  
 “ *coccinea*, White thorn. Most abundant species, generally distribut.  
*Diervilla trifida*, Moench. *D. canadensis*, (Willd.) Darl. Top of North mountain, and along Conedoguinnet.  
*Diospyros virginiana*, L. Persimmon. Rare except along Susquehanna.  
*Epigaea repens*, L. Trailing arbutus. In the mountains, and pine woods of the valley.  
*Euonymus atropurpureus*, Jacq. Burning bush. Abundant along Conedog.  
 “ *americanus*, L. Very rare. Mouth of Hunters run, South mount.  
*Fagus sylvatica*, L. Beech. Common along Yellow Breeches, and at the head of Letart Spring.  
*Fraxinus viridis*, Mx. Sylva. Green ash. One tree found.  
 “ *sambucifolia*, Willd. Black ash. Not common. Near the water.  
 “ *acuminata*, Lam. White ash. Abundant.  
 “ *pubescens*, Walt. Red ash. Common.  
*Gleditsia triacanthos*, L. Honey locust. Not common. Rich soil. Near the water.  
*Hamamelis virginica*, L. White hazel. Common in mts. and near wat.  
*Hydrangea arborescens*, L. *Hydrangea vulgaris*, Mx. *Hydrangea*. Rare. Conedoguinnet creek, on high banks.  
*Hypericum adpressum*, Bart. Spring Forge.  
*Ilex opaca*, L. Holly. Mount Holly, South mountain. Very rare.  
*Juglans nigra*, L. Black walnut. Abundant in wet soil.  
 “ *cinerea*, L. Butternut. Rare.  
*Juniperus virginiana*, L. Red cedar. Juniper. Rocky hills. Common.  
*Kalmia latifolia*, L. Laurel. Very abundant in mountains, and slate lands along creeks.  
*Laurus sassafra*, L. Sassafras. Common.  
 “ *benzoin*, L. Spice bush. Swamps. Common.  
*Liriodendron tulipifera*, L. Poplar, or Tulip tree. Abundant in mountains, and along Yellow Breeches.  
*Lonicera parviflora*, Lam. Honey suckle. Rare. Near water.  
*Magnolia glauca*, L. Fragrant magnolia. Black Swamp, near Pinegrove Furnace. Abundant.  
 “ *acuminata*, L. Umbrella tree. One tree near road from Pinegrove to Gettysburg.  
*Morus rubra*, L. Red mulberry. Rare. Rich soils, and bottom lands.  
*Nemopanthes canadensis*, Raf. Mountain holly. Abundant in wet places of South mountain.  
*Nyssa multiflora*, Willd. Black gum. Abundant.

- Ostrya virginica*, Willd. Woods on slate lands, near water. Common.
- Oxycoccus macrocarpus*, Pursh. Cranberry. Abundant in Black Swamp, South mountain.
- Pinus canadensis*, Mx. Hemlock. High slaty banks of creeks, and hollows of South mountain.
- “ *strobus*, L. White pine. Rather rare except in mountains.
- “ *inops*, Ait. Rather common. Slate Hills.
- “ *rigida*, Marsh.
- Platanus occidentalis*, L. Button wood. Rich soil near water. Com.
- Populus tremuloides*, Mx. Aspen. Abundant near Spring Forge. Rare in the woods.
- “ *tremula*, L. *P. grandidentata*, (Mx.) Darl. Rare.
- Prinos verticillatus*, L. Swamps and damp thickets. Common.
- Prunus americana*, Marsh. Wild plum. Wet meadows. Common,
- Pyrus arbutifolia*, L. South mountain, and along Yellow Breeches.
- var. 1. *melanocarpa*.
- var. 2. *erythrocarpa*.
- “ *coronaria*, L. Crab apple. Abundant in South mountain, rare in the valley.
- Quercus palustris*, Mx. Pin oak. Common in bottom land.
- “ *coccinea*, Wang. Scarlet oak. Common.
- “ *rubra*, L. Red oak. Abundant along bank of creek.
- “ *tinctoria*, Bart. Black oak. Abundant in woods.
- “ *stellata*, Willd. *Q. obtusiloba*, (Mx.) Darl. Post oak. But four specimens found.
- “ *ilicifolia*, Willd. *Q. banisteri*, (Mx.) Darl. Bear oak. Sterile hills of South mountain. Abundant.
- “ *alba*, L. White oak. Very abundant.
- “ *macrocarpa*, Mx. Mossycup oak. Common along Conedoguinet.
- “ *olivae formis*, Mx.? Overcup oak. A few trees along Conedog.
- “ *montana*, Willd. Chestnut oak. Abundant in mountains and on stony ridges.
- “ *bicolor*, Willd. Not common. Wet bottom.
- “ *prinus*, L. Rare in bottom lands.
- “ *castanea*, Muhl. Yellow oak. Rare on high rocky banks alg. crk.
- “ *prinoides*, Willd. *C. chincapin*, (Mx.) Darl. Chincapin oak. Sterile hills of South mountain. Abundant.
- Rhododendron viscosum*, Torr. White azalea. Spring Forge Sw'ps. Rare.
- “ *nudiflorum*, Torr. Shaded banks of rivulets. Common.
- “ *nitidum*, Torr. Abundant in wet grounds of South mountain.
- Rhus aromatica*, Ait. Common.

- Rhus toxicodendron*, L. Abundant in mountains and among stony places,  
var. *radicans*, Torr. Poison vine. On Fences and detached  
trees. Abundant.
- “ *copallina*, L. Wing rib sumach. Abundant in South mountain and  
along Yellow Breeches.
- “ *typhina*, L. Rare.
- “ *glabra*, L. Common sumach. Abundant.
- “ *venenata*, D. C. Common in swamps along Yellow Breeches.
- Ribes hirtellum*, Mx. Wild gooseberry. Holly Gap, South mount. Rare.
- “ *floridum*, L. Herit. Letart Spring.
- Robinia pseud-acacia*, L. Common locust. Common in fields. Spar-  
ingly distributed through woods.
- Rosa carolina*, L. Wild rose. Abundant.
- Rubus villosus*, Ait. Common blackberry. Old fields.
- “ *trivialis*, Mx. Dewberry. Old slate fields. Common.
- “ *hispidus*, L. *R. obovatus*, (Pers.) Darl. Damp woods along Y. Br.
- “ *odoratus*, L. Flowering raspberry. North mountain. Common.
- “ *occidentalis*, L. Raspberry. Common.
- Sambucus pubens*, Mx. Along Susquehanna.
- “ *canadensis*, L. Common elder.
- Smilax rotundifolia*. Green briar. Along fences.
- “ *pandurata*, Ph. Holly Gap. Rare.
- “ *caduca*, L. Thickets.
- “ *sarsaparilla*? Conedoguinot, opposite the Pike Pond.
- Spiraea opulifolia*, L. Abundant. Most so along Yellow Breeches.
- “ *salicifolia*, L. Meadow sweet. Abundant in South mountain.
- “ *lobata*. Murr. Spring Forge. Rare.
- Staphylea trifolia*, L. Bladder nut. Margins of woods. Common.
- Tilia americana*, L. *T. glabra*, (Vent.) Darl. Linden. Woods along  
Conedoguinot.
- “ *alba*, Mx. Rare.
- Ulmus americana*, L. White elm. Near water. Abundant.
- “ *fulva*, Mx. Red elm. “
- Uvaria triloba*, L. *Asimina triloba*, (Dunal.) Darl. Papaw. Rich soil  
along creeks. Shaded spots.
- Vaccinium corymbosum*, L. Tree Huckleberry. Abundant in South mt.
- “ *pennsylvanicum*, L. Common in South mountain.
- “ *resinosum*, Ait. Woods. Common.
- “ *stamineum*, L. Deerberry. Not common.
- Viburnum prunifolium*, L. Sheepberry. Very common.
- “ *lentago*, L. Rare. Mouth of Hunters run, South mountain.

- Viburnum dentatum*, L. Arrow wood. Abundant along Yellow Breech.  
 “ *pubescens*, Pursh.  
 “ *nudum*, L. Abundant in swamps on South mountain.  
 “ *acerifolium*, L. Abundant in South mountain. Rare in the valley.  
*Vitis labrusca*, L. Fox grape. Common in South mountain.  
 “ *aestivalis*, Mx.  
 “ *cordifolia*, Mx.  
 “ *riparia*, Mx.  
*Xanthoxylum americanum*, Mill. dict. Abundant along creek in shade.
- |  |   |   |   |   |   |     |
|--|---|---|---|---|---|-----|
| Whole number of species,                               | - | - | - | - | - | 150 |
| Of these, not found in Chester County,                 | - | - | - | - | - | 20  |
| Species in Chester County not yet found in Cumberland, |   |   |   |   |   | 11  |

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 ANT-IANA, NO. II.

One day, I observed an unusual number of large red ants running about the walks in the garden; and I was curious to know what this new movement might mean. Presently I discovered two or three different groups, each collected around an unfortunate black ant, which they were hauling along by the legs. Thinks I, what's all this? I'll show fair play. But the captives showed no disposition to bite or injure their assailants, but endeavored by struggling to escape. I resolved to await the issue. I presumed that there had been a battle between this company and a colony of black ants that had several weeks before established themselves among some strawberries, and that these were prisoners of war, whom they were conveying home. I followed the direction in which they were moving and in an adjoining field, I discovered a nest. But instead of red ants only, I found in the nest a large population of the identical species of black ants I had just seen them dragging along. The black ones were very busily engaged in enlarging the entrances, carrying sticks and straws, and in performing the other customary labors of the ant hill, while the few red ones that were seen straying among them, appeared to take no part whatever in these domestic concerns. The ants from the garden continued to come straggling in, and now and then one might be seen bringing in a captive with him. Numbers of winged ants of the red species were crawling around the nest and occasionally flying in the air; sometimes the black ones would lay hold of these and lead them into an adjoining hole, but generally they did not seem to molest them.

Since that time, I have frequently examined the nest, and have never seen, except in one instance, the red ants rendering assistance in remo-

ving dirt or collecting food, but have several times observed the others carrying them from one part of the nest to another.

Some time after, the red ants attacked another settlement of the blacks and carried off the *pupae*, or undisclosed young.

On a subsequent occasion, the following scenes were witnessed. A long line of red ants was seen traveling in, straight course, but in both directions. I went to the nest and found the colony in a very unsettled condition and great excitement prevailed. There was a constant train of them pouring in, laden either with *pupae* or young ants, or with full grown ants of a different species, which were black. As soon as they had arrived, they deposited their loads and immediately set off again in haste.

I followed the train from the nest, and at a considerable distance through the garden in an orchard, found that they were attacking a colony of black ants. There was a terrible fight. While some were engaged in grappling with the rightful owners, others were pillaging the settlement and carrying off the defenceless young. This scene was continued until night. About noon next day, the fight was resumed and the darkness alone suspended it.

I counted the number that passed a certain point in a minute, including those going and returning, and on making an estimate, I found that during the seven hours of the first day they had been thus occupied, they must have made 21,000 passages between the two settlements, amounting altogether to a distance of more than 477 miles.

RUSTICUS.

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#### NATURAL HISTORY OF THE BIBLE.

Almost every part of animated nature, as it presents itself to the view, without the aid of instruments, is referred to in the Scriptures, for various purposes. The Bible, therefore, in the department of Natural History furnishes materials exceedingly rich and instructive, which have attracted the attention of the philologist, the naturalist and the Commentator. Bochart's work entitled "*Hieroicoicon; sive de animalibus S. Scripturæ*," is well known to the learned, and Dr. Harris' Natural History of the Bible is in many hands. This latter work, which is easily accessible and which is the result of a considerable range of investigation, should be in the possession of every Student of the Bible, who may not be able to procure other works. In it will be found evidence that the Sacred writers—as was said of one of them—"Spake of trees, from the Cedar tree that is in Lebanon, even unto the Hyssop that springeth out of the wall; he spake also of beasts and of fowl, and of creeping things, and of fishes."

K.

## SPECULATIONS SUGGESTED BY RECENT DISCOVERIES IN ASTRONOMY.

(Extracted from the private correspondence of a friend.)

Have you seen the latest news from the sky? Bessel, who, you know, had the honor of first discovering the annual parallax of a fixed star, has announced the discovery of orbital motions in Procyon and Sirius, or, to use his own words, "*the apparent motions of these two stars are such as might be caused by their revolutions about attractive but non-luminous bodies not very remote from them respectively.*" In short, they seem to form systems analogous to those of the binary stars, but with this peculiarity, that they have dark instead of bright partners, to which they, of course, perform the friendly offices of revolving suns!

Their orbits must, therefore, be highly inclined to the visual ray, else in some parts of their courses they would inevitably be eclipsed by their *gigantic central earths*, as appears to be the case with some other stars such as Algol and omicron Ceti.

The discovery is wonderful, if true, but seems almost incredible! The proper motions of these two stars have been known for ninety years to be upwards of one second annually, and have all this time been supposed to be rectilinear, or nearly so, and, therefore, moved in that time between one and two minutes; and if this time and distance be necessary before the curvature could be detected, what must be the size of the curve and the length of the period? Several degrees, perhaps, and thousands of years in one revolution. The binary stars offer nothing so gigantic as this. The longest period yet discovered is that of gamma Leonis, 1200 years. Gamma Virginis has a period of more than 600 years, and a major s. a. of ellipse of only 12'', which, at the usual distance assigned to the stars, would give an orbit double that of Uranus—what then will be the size of an orbit in which ten times this distance can be just distinguished from a straight line, and what must be the size of a central body that can hold Sirius in check at such a distance? How eagerly may we look for further particulars.

There are some curious considerations connected with the distance and proper motions of the fixed stars, which I do not think have been noticed. It has generally been supposed that the stars are as far from each other as from the solar system, but this cannot always be true, for two stars equally distant from each other, and from the earth, must be separated by an arc of 60°, yet many stars of the first magnitude are much nearer than this; Castor and Pollux are but 5° apart, Sirius and Procyon less than 15°, and many stars of the second magnitude have still smaller intervals; they must, therefore, be much nearer to each other than to the earth, and if so, why may we not look to see them affect-

ed by their mutual attractions? The subject is curious, but I have no room to enlarge. Dick in his "Siderial Heavens" speculates ingeniously, but not very accurately, on the nature and variety of siderial systems. He was the first to conjecture that some of the smaller stars might revolve about large, opaque, and therefore, invisible earths — a conjecture curiously confirmed by Bessel, with respect to the largest.

Some of Dick's hypotheses, however, will not suit the cases, especially the application of the above conjecture to a star in the northern crown, for however large the central earth may be, the revolving sun must necessarily have an orbit many times greater, and therefore, could not be eclipsed for more than half its period. Equally unsatisfactory is his theory of "Periodic Stars," which will account for their gradual diminution, but not for their sudden appearance.

*Wrightsville, Dec. 10th, 1844.*

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#### THE JEWS AND THE GERMAN UNIVERSITIES.\*

BY W. A. ALBACH, A. M. OF PENNSYLVANIA COLLEGE.

Amidst the progressive and powerful movements among the Germans of the Jewish faith, since the time of Mendelsohn, and in the midst of the vigorous development of the Jews in life and science, in education and morals, in ideas and in intellectual wants, there were besides, and there yet are, several other points, to which their attention is directed. One of these is: the admission of Jews to professorships in the universities, if they are equally as well qualified as Christian teachers. An antipathy to the adherents of Judaism, more or less strong, was long sufficient to exclude scientific Jews from the universities. Mendelsohn, the philosopher, was, by the king of Prussia, struck from the list of candidates for membership in the Berlin academy, because of his faith. It is true, in the ardor of the contest for freedom, the Jews obtained the legal right to teach in the universities, all over Germany; and Prussia likewise granted this right in an edict of the 11th March, 1812, but the retrogressive steps, taken immediately after 1815, made these laws of no effect, and to this day the Jews look in vain for an abolition of this latter limitation. If ever any period demanded a philosophical representation of this subject, it is the present; partly because, in many institutions, a beginning has been made to abolish the former exclusion of the Jews, and partly, because the progress of the Jews in science is becoming so rapid, that a refusal to consider this question will soon be

\* From the German of *Dr. Julius Fürst*, as found in *Wuttke's Jahrbuch der deutschen Universitäten*, for 1843-'4.

scarcely possible. Berlin has now received the Jew Peter Riess, as a member of the Academy of Sciences, with which, as is well known, the right of lecturing is connected. Bern, even several years ago, made the Jewish physiologist, Valentin of Breslaw, Professor *ordiuarius*; in Göttingen, we find laboring in the philosophical faculty, the Jews Dr. Theod. Benfey, for indo-germanic philology; Dr. M. A. Stern, for the mathematical sciences; and Dr. E. Bertheau, of Hamburg, for Jewish history and antiquities; in Heidelberg, Dr. H. Oppenheim, of Frankfort on the Main, was received as a private teacher in the law faculty, and Dr. Gust. Weil, as teacher of Arabic; in Leipsic, Dr. J. Fürst, was received into the philosophical faculty four years ago; Marburg, several years since, appointed Dr. J. Hoffa, teacher, and Dr. J. Rubino, professor in the department of philology, &c. But all these departures from former usage have been characterized by so much anxiety, and have at times been connected with such limitations, that we easily perceive the want of principle which exists. In one university there is a hesitancy to advance a private Jewish teacher to a professorship; in another, the Jewish teachers have assigned them a separate place in the catalogue of lectures as well as in rank, as for instance, Dr. J. Rubino in Marburg; so that at least a want of principle, if nothing more, is every where apparent.

Another object of desire with the Jews is: the emancipation of Jewish literature in the universities, or the establishment of professorships for Jewish science, to be filled by Christian or Jewish teachers. There have been established professorships for the Indian, Persian, Arabic and even for the Tartar language and literature; and that justly, since any separation according to nationality or country is unknown to science, whose national element is profoundness, and whose native country is truth; for a general knowledge of Judaism, of Jewish antiquities, and of Jewish history alone, has deep-rooted prejudice prevented the establishment of professorships. This neglect of Jewish science naturally flows from the depressed civil condition of Jews. But now, when science is beginning to exert its influence upon social life and legislation, we should no longer witness such an indifference to Jewish science, a knowledge of which is calculated to banish various mistakes in legislation, and much injustice in social life. The partial attention bestowed upon Jewish antiquities in the last century did much towards meliorating the civil condition of this people, but for eighty years past, even this faint light has been vanishing, and now the knowledge of Judaism, of Jewish literature and science, is in so deplorable a condition in the universities, that soon even the partial knowledge derived from former authors, must be entirely lost.

The third point which engages the attention of the Jews is: the establishment of a Jewish theological faculty. For ten years has this subject been discussed among the Jews, since the later Jewish theologians so early as 1819 abandoned the study of Hebrew theology according to the Rabbinical method of investigating the Talmud and the Mosaic writings. And the desire for scientific Jewish theology has now become general. Zunz in his day desired such a faculty as a seminary for Jewish theology; the same did many learned Jews after him, and Geiger (in his *Scientific Journal for Jewish theology*), expressed himself in clear and forcible language; but no one knew so well how to make this idea popular and general as Dr. Philipson, the religious teacher of the Jewish congregation in Marburg, although he was wholly indebted to Geiger for the matter. On the 24th of Oct. 1837, in No. 88 of his "*Universal Journal of Judaism*," he published a call to raise by subscription, the sum of 100,000 Thaler, in order to erect and support, from the interest, a Jewish theological faculty, and a Jewish seminary. All parties among the Jews acknowledged the importance of such a faculty, and even the most indifferent became interested in it. But now appeared the disadvantage arising to the cause from the person of Dr. Philipson, who, without even a moderate reputation for scientific attainments, assumed the important part of leader in this enterprise. The educated every where withdrew from the movement, to await the time when the excitement occasioned by him should have subsided. In 1838, Dr. Geiger published a little work upon this subject, which, by its sound views and scientific character, is operating much more powerfully upon the better informed part of the Jews. The conviction now generally prevalent among the Jews, that Jewish theological science can flourish only in the universities, is shared by the author, (Fürst.) In Austria such an asylum cannot be expected, since its universities have laid aside the German character, and do not permit free investigation in theology; even many German universities will scarcely suit for this purpose. Upon the whole, the fittest place would probably be Leipsic, where the government has not yet entirely obliterated the former spirit of the universities, where the professors are free from all narrow-mindedness and illiberality, and where Christianity is not altogether intolerant. True, we have heard, that the king of Würtemberg has declared himself not unwilling, even with a fund of only 20,000 Thaler, to establish such a faculty in Tübingen; but Leipsic, as being in the central part of Germany would still seem to be preferable. The first thing now is to add as much to the 13,000 Thaler already collected, as will support for the present, say three Jewish professors, which among a Jew-

ish population of almost a million, scattered through the different German states and among their Slavonian neighbors, can no doubt be easily effected.

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A DIALOGUE BETWEEN A FARMER, AND A TRUSTEE OF PENN. COL.

*Farmer.* I see you have been improving the appearance of the College edifice by a new coat of paint; I hope you have made a greater improvement in the increase of the number of Students, as I have a large quantity of prime beef and pork for which I desire a good market.

*Trustee.* We have indeed opened for you, in this Institution, a fine market for your produce, by which we throw into circulation annually the sum of nearly \$20,000. But this is the least valuable benefit which the College confers upon the community in which it is located, and I am sorry that the farmers generally regard it as *the most important*; and, whilst they have it in their power, at a trifling expense, to educate their sons and prepare them to occupy the most important offices in the gift of the people, and exert a commanding influence for good, they are satisfied to have them plod onward, with only those advantages of education which a common school affords. Believe me, it is the interest of the farmer to educate his sons thoroughly, though they return to the farm and the furrow, which they had, for a time, forsaken.

*Farmer.* I know your views are held by many; for my part, I think that this business of education, and learning the branches, and geometry, and such things, only make men proud and lazy, the good old way of writing and ciphering is enough for me and my boys. The main thing is to get along in the world, and lay up something for a wet day. I have heard many things of colleges and college boys which I do not think are right and proper.

*T.* Many stories, no doubt, are in circulation, which have no foundation in truth, and therefore, should not be regarded. I would be pleased, however, to know more particularly, what it is to which you object.

*F.* I have already said that learning makes men proud and lazy.

*T.* I have heard that objection made more than once, and have invariably discovered that it originated from suspicion and ignorance, and had no fact or truth as its foundation. Ignorant upstarts you will find, in all cases, to be proud, or rather, vain, which I imagine is the proper term. They do not possess knowledge sufficient to teach them their ignorance. They have seen so little of the great field of knowledge, which the great God has spread out before his intelligent creatures, that they do not know themselves. They are very much like some farmers of my acquaintance, who have never traveled beyond the precincts of

their own township, and, ignorant of the improvements made in cultivating the soil and forming manures in other places, fancy that they raise the best wheat and are the best farmers in the world. But, let these sciolists become truly learned, let them dive down into the secrets of God's works beneath, and soar upwards to behold the glory and majesty of his works on high, and look into the mysteries of their own nature, and the character of God, and they will soon be deeply humbled; and they will be prepared, with the great Sir Isaac Newton, to exclaim, "that they are but children walking on the shore of the great ocean, here and there picking up a pebble more beautiful than the rest." No, the true scholar is humble and devout, the least extravagant in his notions, and the most distrustful of his powers; for the higher he soars in his investigations after truth, the wider and more extended are his prospects, the more multiplied and glorious the objects; and, consequently, the more ignorant and insignificant must he himself appear. You mistake, then, very much, if you suppose that learning makes men proud; only consider the character of your minister and that of others, whose learning has been of service to you, and tell me, whether they are proud.

Equally groundless is the charge of indolence. It is true, students are not employed in manual labor as the farmer and mechanic, neither indeed would it be possible, in all cases, or in most cases, to combine labor and study. Isolated cases there have been, as that of old father Carey, the first baptist missionary to India, who, between the stitches he made in the shoes he was mending, managed to pick up a knowledge of the Latin and Greek grammars, and improved in theology so rapidly that he was ordained to the work of the ministry, and finally obtained the honorary degree of D. D.

If you have any doubts concerning the industry of the Students in our College and Theological Seminary, they must vanish, at the sight of the works which have been accomplished, within the last year. They have made not less than a mile of the most substantial walk that can be found any where. They generally saw their own wood, and the vacations are mostly spent in the most active and industrious manner, so that some of them, whose means are limited, make money enough to sustain them during the following session. But, laying aside considerations of this sort, the peculiar and appropriate labor of the Student is not that of the body, but of the mind. Here, I think, the industry even of the farmer is much inferior to that of the Student. Mental effort, physicians tell us, is much more debilitating than bodily. The proof of this is obvious in the pale and lean face of the Student, whilst his neighbor, whose efforts are only those of the body, is ruddy and vigorous.

It is not unusual for Students to rise at four of the clock in the morning, and not retire until ten or eleven, and that too during a whole session together. Show me a farmer equally laborious, and I will admit that knowledge makes men indolent.

*F.* I see, that I have been misinformed, and as you have been educated in a college yourself, and now are a trustee, you ought to know. But I am told that students are irreligious and ill-behaved, and I should like to have my sons keep good company, and grow up in religion, as well as learning.

*T.* I am very glad that you have mentioned this objection, for I myself have heard, that evil-disposed persons and enemies of the College (for you know there are such) have circulated falsehoods concerning us, and have made this very statement, that boys are not as well attended to and their morals as well protected in the preparatory department of college, as in schools where there are not so many. Bad boys, you very well know, are to be found every where. For me, therefore, to say, that all who are in our Institution, are what they ought to be, would be palpably wrong. But this I will say, without the fear of contradiction, that you will not find any where the same number of students more orderly and better behaved. I cannot well conceive what more attention could be bestowed upon them than they receive. I question very much, whether the children of the best regulated families are better instructed in the truths of the Gospel, and are more frequently pointed to the Lamb of God that taketh away the sins of the world. You ought to know, that a large majority of our Students, both in the College and the preparatory department, are professors of religion. Last session, there were two ministers of the Gospel, students in the preparatory department. A year ago, it was said, that all the Students, with a single exception, were under the influence of divine truth. Now, could you place your sons under a better influence, and in better company than this? If you can, I know not where you will obtain it. There is worship staidly morning and evening, the bible is a book of regular and systematic study, the Students are regularly visited in their rooms, and, when parents prefer it, can live with some one of the professors or teachers. In short, if I have formed, as I think I have, a correct and impartial estimate of the moral advantages to be enjoyed in *both departments* of Pennsylvania College, they are not surpassed by any private school or college with which I am acquainted in the U. States.

*F.* Well, this is what I like to hear. I find, it is always best to hear both sides. I did myself doubt some things that I had heard, and thought well of your College; for my neighbor E——, who has a son

in the Institution, says, that he inquired in particular, how things were managed, and he went often himself, and ate at the table, and the victuals pleased him very much, and a pious young man, that he knew, told him that he had not heard a bad word uttered, since he had been in the building. I have a great notion to send my oldest son John, who seems to take learning very well.

---

#### ENTOMOLOGICAL SOCIETY OF PENNSYLVANIA.

About three years ago, five gentlemen devoted to the study of entomology, established a Society under the above designation. The first meeting was held in York, when the constitution was adopted and arrangements made to prosecute their favorite pursuit with combined energy. Dr. F. E. Melsheimer, of Dover, York Co. whose venerated sire was the father of entomology in this country, was very properly elected President. The Society has held several meetings every year since its organization, and though the members are but few, yet they have contributed considerably to the promotion of the science in our country.

The Society has described and published in the "Proceedings of the Philadelphia Academy of Natural Sciences," more than 500 new species of *Coleoptera* (beetles,) and many more still remain to be described. All these are, of course, new additions to the already numerous published species of our country, and every year unknown species are discovered.

One of the members has just finished a full monograph of our American *Longicornes*, (beetles with long antennae,) which will be published in the next volume of the American Philosophical Society's Transactions, and will be a most valuable addition to our entomological literature.

But the principal work on which the Society has been engaged for the last two years, is a Catalogue of the *Coleoptera* of the United States. This has cost immense labor and nice discrimination, but it will be as full as possible at the present time, and will contain references to the works in which the species are described. The principal credit of this work is due to the President, Dr. Melsheimer. Its appearance, though nothing more than a bare catalogue, is looked for with much anxiety in Europe, as we learn from several scientific Journals and private letters.

The Society is in correspondence with some of the most distinguished naturalists in Europe, such as Count Mannerheim, of Russia, Dr. Schoenherr, of Sweden, Mr. Doubleday, of Loudon, Prof. Burmeister, of Halle, Prof. Guerin, of Paris, and others. These gentlemen express the

deepest interest in the Society and are impatiently waiting for its publication.

The members of the Society have been honored with the notice of learned associations, both at home and abroad. Nearly all are corresponding members of the highest scientific Society in our country, and two of them have been honored with diplomas from Europe.

The libraries of several members are rich in Entomological works, and valuable additions are annually made. These books are costly, but they are always free to the use of the members, and are considered pretty much as common property, so far as the unrestricted use of them is concerned.

It will be the next business of the Society to study and describe our numerous nocturnal *lepidoptera*, which have not yet been noticed by previous authors. Here a wide field is open for cultivation, but, we have no doubt, the work will be thoroughly done.

A monograph of the diurnal *lepidoptera* has been prepared by one of the members, which was accepted by the National Institute at Washington, for publication in their Bulletin, but was subsequently withdrawn by the author, for further investigation. It has also been requested for publication, by the editor of a northern Scientific Journal of great celebrity, and may appear in the course of next summer.

Thus has this Society labored. Though very few in number, yet their operations have been extended and, hitherto, successful. We hope that they will soon find many colaborators in the delightful science of Entomology.

ENTOMOPHILUS.

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#### METEOROLOGY, NO. IV.

BY PROF. JACOBS, OF PENNSYLVANIA COLLEGE.

##### *Of the existence of moisture in the atmosphere.*

Previous to the discussion of some other points in meteorology, which we intend taking up, it is deemed best to make the following preliminary statements:

1. *The extent of the atmosphere.* It is found by observation, that the density of the air diminishes by a regular law as we ascend from the earth. Thus the *barometer*, which measures the pressure and consequently the density of the air, gives notice of our elevation above the sea-level, by the descent of the mercury in its tube. A depression of one inch corresponds to an ascent of 922 feet when the air has a temperature of 62°. At an elevation of about 2½ miles, the barometric column will have sunk to one half of its original height; consequently, near-

ly one half of the mass of the atmosphere lies within  $2\frac{3}{4}$  or 3 miles of the earth's surface. But as the density from that point upwards is much less than that below, and is continually decreasing, the remaining half of the atmosphere must occupy vastly more space. By taking into consideration the fact, that this decreasing density of the air at a considerable elevation, in connection with the great increase of cold which there prevails, must diminish its elasticity more rapidly than the force of the earth's attraction decreases, we are brought to the conclusion that the atmosphere is confined to within about 40 miles of the surface of the earth. The coercive force, or that which tends to bring it all down to the surface of the earth, is the earth's attraction—the expansive force, or that which resists the action of gravity, is the elasticity of the air. At a height of about 40 miles they are equal to each other. Gravity will not permit an expansion, nor elasticity a contraction, unless within the narrow limits within which each is altered by other forces. From calculations, also, based upon the phenomena of refraction, the atmosphere is inferred to extend no further than about 45 miles from the earth.

2. *The composition of the atmosphere.* By careful analysis every five cubic inches of pure and dry air are found to consist nearly of four of nitrogen and one of oxygen gas. But the air is never perfectly *pure*. It contains variable quantities of other gases, of which carbonic acid is the most considerable, amounting sometimes to 62 parts in 100000 of air, and never less than 37. But though this gas exists at all known heights, its amount in proportion to the rest of the atmosphere is too small to influence in a sensible manner the phenomena of meteorology.

Neither is the air ever perfectly *dry*. It always contains variable quantities of moisture, which plays a most important part in all atmospheric changes. Indeed the changes dependent directly or indirectly upon the moisture existing in the atmosphere, constitute the subject which we have in hand.

3. *The forms under which moisture exists in the atmosphere.* Moisture exists in the atmosphere under three forms. *First*, it exists as *invisible* vapor. Any one can satisfy himself that this is the fact, by filling a tumbler or tin-cup with ice-cold water during summer, when he will soon see its outer surface covered with large drops of water resembling dew, or with a freezing mixture during winter, when he will soon see the vessel covered with frost. *Secondly*, moisture exists as *visible* vapor. The passage from the state of invisible to visible vapor is beautifully seen by watching the steam of boiling water as it issues from the spout of a tea-kettle. At the mouth of the spout and to the distance of about an inch from it, nothing can be seen, because the vapor is there

yet invisible by reason of its high temperature; but beyond about an inch from the spout, the vapor is rendered visible by reason of its diminished temperature, and there it appears like a cloud. Visible vapor exists in two states; viz. that in which the particles are too small to be separately seen, and that in which they are sufficiently large to be seen either by the naked eye or by a magnifier. The *former* is dry, or does not moisten objects with which it comes in contact, and, though its particles are not separately visible, when we look through its mass, it obscures the air and has all the appearance of *smoke*. Indeed genuine smoke does not perhaps owe its visibility much more to the volatilized carbon than to the moisture it contains. The *latter* is generally wet, and constitutes what is ordinarily called fog and cloud. *Thirdly*, moisture exists in a state of greater condensation as *rain, hail and snow, &c.*

4. *The quantity of invisible vapor in the air.* The quantity of invisible vapor capable of existing in any portion of the atmosphere, is dependent upon its temperature. The idea entertained by most persons, that it is the air which produces the evaporation, is not sustained by experiment. At a given temperature the same quantity of moisture will exist in a given space, whether that space be a vacuum, or contain air. The air actually forms a mechanical impediment to the formation of vapor, so that the space will not be filled as soon if air be present as if it be a vacuum. Currents do indeed promote evaporation, but it is by continually sweeping away the vapor already formed, and thus giving room for the formation of more.

The quantity of vapor in the same space at different temperatures, does not bear a *direct* ratio to the temperature. Within the ordinary range of the temperature of the atmosphere near the earth, the quantity of vapor is nearly doubled for every additional increase of twenty degrees in temperature; so that when the air becomes warmer, the quantity of vapor capable of existing increases, and when it becomes colder, diminishes more rapidly than the temperature.

5. It is a consequence of this law, that if a space saturated at  $80^{\circ}$ , that is, holding as much vapor in an invisible state as possible, were cooled to  $60^{\circ}$ , it would lose by condensation one half of its moisture; or  $6\frac{1}{2}$  cubic yards of space would afford one cubic inch of rain. Or, since the atmosphere grows colder as we ascend, by  $1^{\circ}$  for every 352 feet, if  $6\frac{1}{2}$  cubic yards of air saturated with moisture at  $80^{\circ}$ , were elevated to the height of 2300 yards, it would become cloud, and deposit one inch of rain. On the contrary, air saturated with moisture at  $60^{\circ}$ , if heated to  $80^{\circ}$ , would then be only half saturated, or would become comparatively dry.

Now though the air is very seldom saturated, even over large bodies of water, it must be plain that slight changes in its temperature will produce apparently great changes in its comparative dryness or moisture. It is also in consequence of this law, that the invisible is so readily condensed into visible vapor or cloud, and thence precipitated in the form of rain and snow, and that these again, on the contrary, are so readily converted into vapor and elevated into the atmosphere, thus producing that endless round of changes the investigation of whose laws constitutes the science of Meteorology, and which not only afford a pleasing and useful variety in the world without us, but are also absolutely necessary to enable the earth to sustain vegetable and animal life. It is further a consequence of this law, that as the temperature is greatest near the surface of the earth, and thence rapidly diminishes as we ascend, the great mass of vapor must be confined within a moderate distance of the earth. Cloud is seldom found beyond an elevation of  $2\frac{1}{2}$  or 3 miles high. The region of the clouds is that elevation at which the imperfectly saturated air, when elevated from below, would become cold enough to condense its invisible into visible vapor. This must vary exceedingly at different times. When the air is near saturation the cloud is low, and sometimes rests upon the earth as in mists and fogs; when the air is a little drier, the cloud is higher; when it is very dry, there is either none at all, or it is to be seen at a great elevation like threads stretched across the sky.

6. The space moreover in which the cloud exists, contains not any more moisture than that immediately below it, but generally much less, though the former be apparently filled, and the latter seem to contain none. The higher temperature of the space below holds its moisture in an invisible state, which that in which the cloud exists cannot do. The steam of boiling water issuing from the spout of a tea-kettle may again be adduced as illustrative of this point.

This lower space, in which ordinary cloud does not form, because it is not saturated with moisture, is nevertheless almost constantly obscured by vapor in an incipient state of condensation, ordinarily called *smoke*. The difference between this and ordinary cloud is, that the latter is formed by rapid condensation in a space nearly saturated, and therefore consists of larger particles, and the former by slow condensation in a space in which the moisture is increasing, but yet below saturation. Its particles are small and not sufficiently near each other to produce a dense cloud.

These preliminary statements will greatly facilitate our discussion of points presently to be taken up.

## SUBTERRANEAN SALT WORKS.

BY PROF. CHAS. A. HAY, OF GETTYSBURG.

That jaunt of three miles in the heart of the Durrenberg revealed to us the manner in which the brine is procured from which the Austrians manufacture their salt. Chambers are excavated in the salt rock, into which pipes are introduced from above. Through these fresh water is let into the chambers until they are filled to the ceiling. At once the rock, which is composed of clay, or marl, or gypsum, intermingled with and saturated by the salt, begins to crumble away from the sides and roof, the salt being dissolved, and the earthy matter falling upon the floor of the chamber. This process is allowed to continue until the water has gained twenty-six per cent. of salt, when it is tapped off by pipes leading through the lower shafts of the mine outward to the side of the mountain and down into the valley where it is evaporated. As soon as these chambers have been emptied of their brine, the floor, now strewn with what had fallen from the ceiling, is spread over with a layer of pounded clay, and fresh water is again introduced from above. This immediately attacks the surrounding rock, and removes again between one and two feet from the sides and ceiling before it gains its required percentage of salt. The time necessary for it to acquire this degree of saltiness varies in the different mines. Here, at Hallein, a few weeks suffices, at some others months are required, and at Hall (Aust.) a whole year.

It will at once be seen that these dissolving chambers must be constantly rising in the mountain and spreading out horizontally. And it is a singular fact that the mass of rubbish that collects upon the floor, and that subsequently forms the roof of other chambers that work their way up from below, becomes saturated again with salt and capable of furnishing a new supply.

Dreadful accidents sometimes occur in these mines. The water from one chamber, eating its way through the rock, sometimes finds its way into another in which the workmen are engaged, and great loss of life ensues. Sometimes the roof falls in and two chambers are thus thrown into one. No one can wonder at this, for some of the chambers are five and six hundred yards in circumference, with not a single support for the rocky ceiling. When they have spread to so large a size they are generally deserted, or left, half full of water, to be visited by the curious. The one we sailed through, and which had been so brilliantly illuminated for our gratification, was certainly larger still. The statistical account of the mine gives the dimensions of this chamber as fifty-five fathoms and six feet long, and twenty-eight fathoms and five feet broad. I do not know the precise value of the Salzberg fathom,

here used, but reckoning it at fifteen feet would give a thousand and sixteen feet as the length, and four hundred and twenty-five as the breadth of this chamber. And nothing but the marly rock as its roof!

A singular apparatus is employed down at the foot of the mountain for measuring the amount of brine *tapped* from these chambers. Two large vessels, about the size of hogsheads, are attached to the ends of a beam that swings upon a pivot. The water, led down the side of the mountain in pipes and falling into one of these vessels, gradually bears it downward until, just as it is completely filled, it strikes a projecting rod that opens a valve in the bottom of the vessel, and it commences at once to discharge its contents into a reservoir below. The same instant the current of brine is turned into the other vessel, which is filled and sinks as the first is emptied and rises. And thus the see-sawing process incessantly goes on, the number of oscillations being marked, like the turns of a reel, upon a dial-plate attached to the apparatus. Thus the brine is made to measure itself. The beams and wheels of this apparatus become encrusted with a deposition of crystals from the salt water as it trickles over them. I broke off some and observed that here it *always* assumed the form of the cube, and was perfectly opaque and white; whereas the minute crystals I had procured up in the mountain were hexagonal and variously truncated and perfectly transparent.

From the large reservoir the brine is let off to the pans, or caldrons, as fast as it is needed. These are not more than about a foot deep, but at least fifty feet in circumference. A constant fire is kept up under these for two weeks at a time. The salt crystallizes rapidly, and is scraped to the sides of the pan and shovelled out into baskets shaped like the mould of a sugar loaf, and just large enough to hold one hundred pounds. Night and day one set of hands succeeds another, and fresh brine is let in as fast as the old disappears. Clouds of vapor incessantly pouring forth from the blackened roofs shows what becomes of the mountain water that had been let into the chambers above, fresh and pure; tons of table salt stowed away in the imperial storehouses, account for the saline treasures of which the mountain has been robbed; and upon the iron plates of the caldrons are deposited the other mineral substances that had been held in solution by the brine before its evaporation.

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#### A NEW WAY OF DESTROYING THE DERMESTIDÆ IN COLLECTIONS OF INSECTS.

Naturalists in all ages have complained that their Collections were constantly attacked by the *larvæ* of small beetles, and sometimes of

moths, which commit dreadful ravages. Various methods of exterminating these shameless marauders have been suggested and practised. Some put lumps of camphor into their drawers of insects or bird skins—others smear the sides with turpentine, or drop it on a piece of sponge or cotton fastened to the bottom with a pin. Both of these modes may be effectual to some extent, but *baking* drawers and all, if they are not too large, is after all the most effectual. That eminent practical naturalist Titian Peale, now of Washington, some years ago invented an oven for this purpose, which suits the purpose admirably; but I think I have found out a more simple plan, which I have successfully practised, which, besides, has the great advantage of costing nothing. I keep my insects in boxes with a cover fitting tightly, and, notwithstanding, these villainous larvae will get in. I take the cover off and stand the box, with the open side downward, on the stove. If the stove is too hot, so as to scorch the wood, I put four pieces of hard clay, or plaster of Paris, or any incombustible substance, on the stove and stand the box on them. As soon as the insects get a little warm, the ravenous depredator feasting in the abdomen of one, pokes out his nose to see what's the matter. He feels that the place is getting uncomfortable, and tries to escape. In that attempt he falls on the stove, where he meets with a warmer reception than he desires. It is on the same principle that men instantly leave a place that "is getting too hot" for them. Drawers of insects may be treated in the same way, and I can assure all who choose to try it, that it is perfectly effectual. This mode will answer better for beetles than butterflies, but if carefully done, the wings of the latter will not be injured by the heat.

M.

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EXTRACTS FROM THE REPORT OF THE CURATOR,

Read before the Linnæan Association, Dec. 14, 1844.

Since the last report of the Curator, there has been a large accession to the collection in our museum. Almost every department of it has been more or less increased. Donations have been received of birds, shells, crabs, lobsters, minerals, Indian curiosities, coins, continental money, pictures, dried plants, human skulls, and some other parts of the human body, anatomically prepared. Most of these things have been presented to the Association by honorary members. Especially are the thanks of this Association due to Mr. Schlegel, of Winchester, Va. for that choice selection of beautiful and well prepared birds, which he has sent us, and to the Rev. Mr. Conrad, for that munificent donation of minerals and Indian curiosities, which he has presented to the associa-

tion. Mr. Conrad, it seems, did not merely send us such specimens, as he supposed would not add much to the beauty of his own cabinet, or duplicates, but very generously gave us all he had. Other honorary members, gentlemen from Washington, have also sent liberal donations through the hands of our energetic and persevering President, Rev. Dr. MORRIS, who manifests so deep an interest in the prosperity of our society.

Certain it is, that if contributions continue to flow in as they have for the last month or two, there will soon be no room to receive them. We cannot, therefore, be too energetic in our efforts to procure a more capacious and commodious place of deposit. We need a *Linnean Hall*—we must have it.

But I must not neglect, at the same time, to notice the commendable zeal of many of our active members during the last vacation. Whilst they were enjoying the social pleasures of "Sweet home," they did not forget the interests of the Society. They exerted themselves in procuring subscribers for the JOURNAL, and every one brought back something rare or curious to replenish our museum.

Since the commencement of this session, almost the entire aspect of our museum has been changed, suitable blinds have been procured for the windows, additional and beautiful cases have been made for the minerals, all the cases have been handsomely painted, the walls have been decorated with the diplomas of the College and of the literary Societies, and with other pictures and portraits of distinguished men; and a row of cases, filled with stuffed birds and other natural curiosities, has been ranged through the centre of the hall. It cannot fail to interest every visitor, not entirely destitute of all taste for the beautiful, the curious or the scientific. I would advise the members of this Association to resort thither as often as possible, and linger amid those wonders of nature and of art, and they will rarely fail to have their curiosity excited, and their minds expanded.

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DEFERRED ARTICLES. Several articles, among them one upon the "Linnean Hall," and "Illustrations of Phonography," have been crowded out by the unexpected length of one or two others. We have several others on hand, which will appear so soon as we can find a corner in which they will fit both as to quality and quantity. Anonymous communications, containing statements of facts of which the Editors have no knowledge, must, from the nature of the case, be declined.



# Pennsylvania College, Gettysburg, Pa.

## FACULTY AND INSTRUCTORS.

- Rev. C. P. KRAUTH, D. D.—*Pres't and Prof. of Ev. of Christ., Moral Science, &c.*  
Rev. H. L. BAUGHER, A. M.—*Prof. of Greek Language, Rhetoric, &c.*  
Rev. M. JACOBS, A. M.—*Prof. of Mathematics, Chemistry, &c.*  
Rev. W. M. REYNOLDS, A. M.—*Prof. of Latin, Mental Philosophy, &c.*  
M. L. STOEVER, A. M.—*Prof. of History and Principal of Preparatory Department.*  
Rev. CHAS. A. HAY, A. M.—*Prof. of German Language and Literature.*  
DAVID GILBERT, M. D.—*Lecturer on Anatomy and Physiology.*  
Rev. J. G. MORRIS, D. D.—*Lecturer on Zoology.*  
WM. ALBAUGH, A. M.—*Tutor and Teacher in Preparatory Department.*  
MR. H. R. GEIGER.—*Teacher of Writing.*

PENNSYLVANIA COLLEGE has now been chartered about fourteen years. During this time its progress has been such as to gratify the most sanguine expectations of its friends. The course of studies is as extensive and substantial as that of any Institution in the Country. The *Preparatory Department* provides for instruction in all the branches of a thorough English, business education, in addition to the elements of the Mathematics and Classical Literature. The *College Course* is arranged in the four classes usual in the Institutions of this country.

The government of the students is as energetic as their circumstances seem to require. They attend at least two recitations a day, Church and Bible Class on the Sabbath, and are visited in their rooms so frequently as to preclude the danger of any great irregularities. It is believed no Institution in the United States has more exemplary young men in connexion with it. They are all required to lodge in the College Edifice, special cases excepted.

The annual expenses are—for board, tuition and room-rent, during the winter session, \$61 87½: for the summer session, \$41 87½. Washing, \$10 00; and Wood, \$3 00. Total expense, \$116 75. Boarding can be obtained in town at \$1 25 per week.

There are two vacations in the year, commencing on the third Thursdays of April and September, and each of five weeks continuance.

The winter session commenced on the 24th inst., with the accession of about twenty Students in the Freshman Class, admitted at the close of the summer session, and a respectable number of applicants for admission into the Preparatory Department.

## Acknowledgements of Donations to the Cabinet of the Linnæan Association of Pennsylvania College.

January, 1845. From *Spencer F. Baird*, Esq. of Carlisle, Pa. per *Mr. J. W. Miller* Skulls of various kinds of birds, nine sheets of photographic impressions of the leaves of various kinds of plants, four specimens of the Testudo shells, a number of minerals, a specimen of cloth, from the South sea Islands.

2. A finely preserved specimen of the Groundmole, from *Mr. S. Shroder*, of Fountaindale, Pa.
3. A box of minerals, from *Dr. Fahnestock*, of Pittsburg, Pa. per *Prof. Jacobs*.
4. From *Miss Trille*, one pair of Indian moccasins, per *Mr. B. Benedict*.
5. From *Mr. H. C. Eckert*, thirty specimens of coins, minerals and shells.
6. From *Mr. D. Eycler*, eighteen specimens of minerals.
7. From *Mr. Forney*, of Gettysburg, coin, serpent in alcohol.
8. A box of shells &c. from *Mrs. Caroline H. Van Patten*, of Washington, D. C. per *Mr. R. G. Clarkson*.
9. One box of Reptiles, from *R. J. Brooks*, Esq. Pensacola, Fl.

THE

## LITERARY RECORD AND JOURNAL

Of the Linnaean Association of Pennsylvania College.

MARCH, 1845



CONDUCTED

By a Committee of the Association.

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1½ sheet, periodical—Postage, 100 miles 2½ cents, over 100 miles 3½ cents.

NEINSTEDT, PRINTER, GETTYSBURG.



THE LITERARY  
**RECORD AND JOURNAL**

OF THE LINNÆAN ASSOCIATION OF PENNSYLVANIA COLLEGE.

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VOL. I.

MARCH, 1845.

No. 5.

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THE DANGER BIRD OF NEW ZEALAND.

DINORNIS NOVÆ ZEALANDIÆ. OWEN.

BY PROF. FOREMAN, WASHINGTON UNIVERSITY, BALTIMORE, MD.

During the mist and obscurity of former geological Epochs, vast numbers of organic forms suffered a total extinction, and therefore cannot now be found living in any country on the globe. Their remains which consist chiefly of the bony skeletons of the vertebrate, or shells and carapaces of the invertebrate classes, open to the inquisitive naturalist a great volume full of instruction and entertainment, stereotyped in stone, and illustrated by figures which nature herself has drawn. Of the vegetable tribes too, the leaves, stems, fruits and forms of inflorescence of plants of entire continents, are found laid carefully down between leaves of sandstone or slate, and pressed into shapes of unmatched elegance. But of the element of *time* concerned in the fulfillment of these results no calculation can be made—nor can their chronology be tabulated, for, compared with the duration of man's occupation of the globe, these changes have occupied a term of ages which would seem to count back through all eternity.

But we have abundant evidence to show that this process of extinction has not by any means ceased, for the fate of certain animals known by tradition, or by the existence of their very recent remains in our museums, to have lived during the historical period, fully assures us of its progress at this present time.

The loss from among the living tribes of a remarkable species of bird, the Dodo, (*Didus Ineptus*, Linnaeus) furnishes us with a most striking example. It was certainly seen alive by the Dutch navigators, upwards of two hundred years ago, on the Isle of France. Landing there, soon after the passage to the East Indies by way of the Cape of Good Hope had been discovered, and when the island was still uninhabited, they saw and killed for food numbers of this bird, whose awk-

ward sluggish movements rendered it an easy prey to man—an enemy to which it had hitherto been a total stranger. Stuffed skins and even the living bird itself were brought as curiosities to Europe, and to remove every possible doubt as to the former existence of the Dodo, there are now in the English museums portions of three different individuals of a large species of walking bird, to which all naturalists agree in assigning but one name, that of the Dodo. These have been in the possession of well known persons, and their transference from one hand to another can be traced, ever since 1594 when the Dutch were exploring the countries around the Cape of Good Hope.

There is authentic evidence on record of an entire skin of this bird having once belonged to the museum of Oxford, which, being adjudged by the Board of Visitors to be in an unfit state for further keeping, they ordered it to be destroyed in 1755. One of the feet and the head however were preserved, and still remain as evidence of the existence of this singular species, and are valued as the rarest and most inestimable treasures of Oxford. There is also in the British museum in London, the leg of another individual, and a very obscure looking painting of the entire bird as it appeared in its native country, both of which have been seen by the writer of this notice. The painting is said to have been executed in Holland, from a living specimen of the Dodo which had been brought from St. Maurice's Island. The ownership of this painting cannot be traced farther back than as the property of Sir Hans Sloane when president of the Royal Society. All of the localities known to have been frequented by the Dodo have in recent times been traversed in every conceivable direction by explorers in Natural History, without detecting any trace of it whatever in a living condition. In 1830 some fossil bones were disinterred from under a bed of lava in the Isle of France and were sent to the Paris museum. Among many other bones belonging to a large living species of land tortoise, were those of the head, humerus and sternum of the Dodo. Upon inspecting these remains Cuvier pronounced them to have belonged to a huge bird of the gallinaceous order.

The most extraordinary vertebrate species, however, which is known to have recently gone out of existence, is the *Dinornis*, or Danger bird of New Zealand. The discovery of it dates from Nov. 1839, when Professor Owen exhibited at a meeting of the Zoological Society of London, a fragment of the shaft of a *femur* or thigh bone, six inches in length and five inches and a half in its smallest circumference—both extremities being broken off. The canceled structure so requisite and remarkable in birds of flight, being absent in this bone, it was declared by Prof.

Owen to belong to a form allied to the Ostrich, or more closely to the Apteryx, or wingless bird of New Zealand, but of far more gigantic proportions than either of them. The natives have a tradition that it belonged to a kind of Eagle which they called "Movic," or sometimes "Moa." Quantities of similar bones have since been found buried beneath the muddy banks of the rivers of New Zealand. The fragment exhibited at this meeting contained so much of its original animal matter as to prohibit the idea of classing it as a Fossil. But as there is no instance known of such an enormous bird having been met alive, the discovery of its remains became a matter of peculiar interest, on account of its very recent extinction, and the fact of a similar fate having overtaken the Dodo, which is a species closely allied to it in its anatomical structure.

In 1812 Dr. Buckland received some additional information, from a friend residing at Poverty Bay in New Zealand, who sent with his communication several cases of bones belonging to this bird. They were collected from the mud of the banks and of the bed of the river at low water, where they lay a few inches below the surface. From all the collections made, there could be distinctly enumerated portions of thirty different skeletons, from which it was inferred that they had formerly been very numerous. The longest bone of any hitherto found, was a *tibia*, (corresponding to the large bone of the fore leg of the human skeleton,) being 2 feet and 10 inches. A femur proportionate to this tibia should measure at least 17 inches. Allowing the whole skeleton to have its various other parts constructed upon a similar scale, it has been estimated that the animal it belonged to *could not have been less than 14 or 16 feet high*. It is also supposed, from its skeleton, to have possessed, for a bird, a very low grade of organization, especially in the form and structure of its lungs, and to have approached in this respect more nearly to the reptiles than any other of the great divisions among animals.

Every accessible fact in its history, as made out, proves the *Dinornis Novæ Zealandiæ* to be the most gigantic of known birds, and probably confined to that part of the world alone in which its remains are found.

The gentleman who forwarded these bones referred to above, to London, remarked in his letter, that in a conversation which he had held with an American gentleman concerning them, the latter declared the bird to be still living near Cloudy Bay in Cook's Straits. He proceeded to state that the natives there had mentioned to an Englishman belonging to a whaling party, that there was a bird of enormous size to be seen only at night on the side of a hill near that place, and being accompanied by a native guide and a second Englishman the whole party

proceeded to the spot. Here after waiting a short time they saw the creature in question at a little distance. They describe it as being about 15 feet high. One of the men proposed to go nearer and shoot, but his companion was so exceedingly terrified, that they were satisfied with merely looking at it, when, soon after the bird monster took the alarm and strode off up the hill side.

The acuteness of Professor Owen's reasoning upon the osteology of this animal will be apparent to all, when they revert to his announcement after inspecting the first fragment of bone which he obtained, only 6 inches long, "that it belonged to a large struthious bird of a heavier and more sluggish species than the Ostrich." It enabled him, scanty as the sources of information were, to draw the outline of the whole skeleton, which was subsequently seen to be an exceedingly close approximation to the true form, as shewn by the bones themselves when afterwards they had been collected and applied together. To arrive at the structure of an entire animal from a single bone or from the fragment of one, requires the comparative anatomist to have vast experience, in all the phases of organic forms, and a powerfully comprehensive mind. It was the great intellect of Cuvier which invented this method, and very few have succeeded him who have practised it so successfully as Owen.

The discovery of this strangely formed bird, throws a world of light upon some obscure impressions or footmarks left in the red sandstone of Connecticut, and upon which Professor Hitchcock hazarded an opinion, when first discovered, that they were the tracks of a gigantic bird. It was then objected, that the size of the footsteps, 15 inches, and the stride, or space from one mark to the other, was so enormous that no bird then known, either recent or fossil, could have produced them; and by many geologists they were referred to, as the traces left by some of the great Saurians. Professor Owen however admits that these footmarks were impressed by some gigantic bird, whose fossil skeleton will some day be disinterred, and first, probably in Connecticut; and awards merited honor to Dr. Hitchcock for possessing the moral courage to avow and sustain an honest opinion before an incredulous scientific world.

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METEOROLOGY, NO. V.

BY PROF. JACOBS, OF PENNSYLVANIA COLLEGE.

INDIAN SUMMER.

1. *Definition and general character.*

The season, to which, by common consent, the appellation of "Indian Summer" has been applied, is one of peculiar interest to the peas-

ant as well as to the philosopher ; to the community at large, as well as to those, who are endeavoring to discover the laws by which the material world is governed.

To the former, it is invested with no ordinary interest, because it is one of those grand stages in the annual round of change of season, which is connected with much physical, and, it may be added, much mental enjoyment. At that period, the first winds, immediately succeeding the autumnal Equinox, have swept by, and a season of comparative quiet has succeeded. The frosts have put a check to vegetation, and exposed to us "the sear and yellow leaf." The external world has sunk into temporary repose. The air is calm and balmy, and the sun shines with a mild and subdued light. The huntsman goes forth rejoicing in his sports, the laborer is cheerful amid his toils, and a thousand hearts are the homes of real pleasure.

To the latter, who, equally with others, enjoy the invigoration of body, and exhilaration of spirits, which it is calculated to bring with it, it is likewise invested with peculiar interest, because they look upon it as a great *fact* in the world of nature, claiming their attention—as a most striking phenomenon inviting their investigation, and demanding of them the discovery of its *physical cause*. This cause it is designed, if possible, to assign, after the facts respecting the phenomenon in question shall have been more fully stated. The explanation which will be attempted, though it may not satisfy all, it is hoped will not be without some appearance at least of plausibility. It is based, as it will throughout appear, upon the common and well known facts of Meteorology.

2. *Is this season peculiar, or is it the only one of the kind occurring during the year?*

The prevailing opinion is, that the state of the weather and the appearance of the sky, which characterize the "Indian Summer," are peculiar, and that their like is not to be found or even thought of at any other period. But even a cursory comparison of the various conditions of the atmosphere will convince any person, that the "Indian Summer" is but one of a whole class of similar phenomena occurring at various times during the year. It is in general more distinctly marked, by the greater *regularity* of its occurrence, by the length of its *duration*, and by the *degree* of obscurity produced in the sky by its accompanying haze or smoke, than others of a similar character. *These* are the circumstances, which have forced it upon the attention of the community, and have exalted it to such a pre-eminence, as to make it appear as tho' it stood alone of its kind in the whole circle of the year. But there are others, though not in general as well characterized as this, which belong

to the same class of phenomena, and for which the same explanation must be given. Seasons of comparative rest in the atmosphere are of frequent occurrence, and the sky is scarcely ever free from matter, whatever that may be, which destroys its transparency. Instead, therefore, of confining ourselves to the single phenomenon, whose name stands at the head of this article, it is thought best to bring all the most important cases of a similar character together, and then inquire how far they may all be referable to the same great atmospheric laws for their existence.

Passing by the numerous minor cases, happening generally at intervals of about two weeks, and, because of their frequency, striking no one, except perhaps the meteorologist, as in any respect remarkable, we may direct our attention to four periods during the year, at which, with considerable regularity, are to be witnessed the great distinguishing characteristics of the "Indian Summer."

The *first* occurs, with but little variation as to time, at about the close of October, or the beginning of November. It scarcely extends as far as the 12th or 13th of the latter month. This is the season to which the name of "Indian Summer" has been appropriated. In its *duration* it is not perfectly uniform, sometimes continuing for two or three weeks, and at others only as many days. During the Autumn of 1843, it continued only for five days, viz. from the 28th of October to the 2nd of November. Neither is it uniform in its *intensity*, it being, during some years, scarcely distinguishable from the rest of the seasons. Thus the case just cited was so faintly characterized, as to have led many persons to suppose that during that year there was no Indian Summer. And though it lasted about the usual length of time during the Autumn of 1844, viz. from the 2nd to the 12th of November inclusive, it was interrupted near its commencement by a storm continuing three days and a half, and was so faintly marked, that for every thing, except that it occurred at the proper time of the year, it scarcely deserved the name Indian Summer as much as a great part of the month of September did. From this it would appear that the Indian Summer of October and November is not so peculiar as is generally supposed.

A *second* period of similar atmospheric condition, occurs at about the middle or close of April. This is, sometimes, extremely well marked; so much so as to arrest the attention of even the casual observer. Among numerous cases which have occurred, that of 1833 may be cited as very remarkable. For about three weeks, commencing in April and continuing until the 9th of May, the atmosphere was darkened by what had the appearance of *smoke*, which was afterwards enforced by real

smoke, arising from extensive fires then prevailing in our mountain forests, on account of a considerable drought then existing. This state of things was, at length, broken up by powerful and continued rains. From the 2d to the 16th of April, 1844, also a period of two weeks, a condition of atmosphere existed, as remarkable in every respect, as the Indian Summer of November has ever been found to be. During every year, however, perhaps without exception, this peculiar state of weather may be noticed, more or less distinctly, at the time just named.

A *third* case of similar condition of atmosphere is to be observed from about the middle of January to its close. Its duration is from eight days to two weeks. During this season, it not unfrequently happens that the farmers, in Pennsylvania and Maryland, plough the grounds designed for the reception of their spring crops. Among the more remarkable examples of this kind, may be cited the winters of 1817 and '18, and those of 1842 and '43. The January just passed has been extraordinary for its mildness; but, though having the usual amount of *smoke* in its atmosphere, being a part of a winter unusual in its character from its commencement to the first of the last month (Feb.), it does not stand contrasted with the rest of the season as other Januaries frequently do.

A *fourth* case of that state of weather under consideration, occurs during the month of August. The atmosphere has sunk into a state of almost profound rest. The breezes, from the S. and S. W. which had, almost daily, refreshed us during the months of June and July, and which had thus rendered the heat less oppressive, have died away. The almost stagnant and sultry air has its transparency destroyed by a thin haze, through which distant objects appear as if tinged with the color of smoke. Thunder clouds have diminished in frequency and in extent; and hence, except during extraordinary seasons, the month of August is deficient in rain. The widely extended rain cloud does indeed frequently cheer us with its refreshing showers, but these it distils rather gently and quietly, and, after it has passed away, a dusky atmosphere succeeds. This peculiarity of weather mostly occurs from the beginning to the middle of the month.

There are, therefore, agreeably to these views, four grand periods, at which a smoky or hazy atmosphere pre-eminently prevails; viz. two of greater intensity, occurring about a month or six weeks after the vernal and autumnal Equinoxes; and two of less intensity, or of less distinct features, occurring at about the same length of time after the summer and winter solstices. The autumnal is generally of the greatest intensity, particularly so, as the immense volumes of *actual smoke* which are

thrown into the air from ten thousand fires kindled by Indians and hunters among the western forests strewed with the recent fallen foliage, add their sombre hue to the already existing *vapor smoke*. The "Indian Summer" is, consequently, only one of these four periods, and subject like the rest to vary very much in character and duration during different years. It must be regarded as only one of the annual round of fluctuations to which the gaseous robe of the earth is subject.

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#### ILLUSTRATIONS OF PHONOGRAPHY.

BY PROF. W. M. REYNOLDS, OF PENNSYLVANIA COLLEGE.

We now proceed to show how this system which we have proposed for the notation of sound operates. And as one of the most formidable objections to it will be that it "murders the king's (? queen's) English," we shall at once test this matter practically. By the "English language" I understand not merely the language of books, but much more that spoken language which we employ in the social intercourse and the business transactions of every day, which gave its melody to the strains of Chaucer and of Spenser, of Shakspeare and of Milton, as well as to those of Burns and Byron, Campbell and Wordsworth, and in which Pitt and Fox, Burke, Curran and Grattan, Otis, Adams, Henry and Webster, and their compeers have thundered and lightened. This is not a dead language; it does not consist merely in the letters or written words in which it is attempted to preserve it. Imperfect as its written form is, it is not a mere picture language, conveying only ideas, and giving us no clue to those sounds which have so often thrilled and breathed fresh life into our hearts, and which is, even in its most trifling forms, endeared to us by all the holy associations that make music of our "household words." The theory of the English, like that of every alphabetic language, is, that the combinations of its letters present representatives of all its spoken forms. But that the fact does not correspond to this is admitted upon all hands. Let us see, then, whether the notation of sounds which we have proposed, will more successfully and sufficiently answer this purpose, and whether it is of such a nature as to commend itself to general use.

As a test, let us see how some of our most venerable English literature would look in the garb which we propose to give it universally, and let us ascertain what innovations are necessary, and then candidly weigh the advantages to be derived from them. The second stanza of Spenser's *Fairie Queene* will furnish us with an example. The original, if printed in the beginning of the 16th century would have been somewhat in this style:

And on his brest a bloodie crosse he bore,  
 The deare remembrance of his dying Lord,  
 For whose sweete sake that glorious badge he wore,  
 And dead, as living ever, him ador'd :  
 Upon his shield the like was also scor'd,  
 For souveraine hope, which in his helpe he had.  
 Right faithfull, true he was in deede and word ;  
 But of his cheere did seeme too solemne sad ;  
 Yet nothing did he dread, but ever was ydrad.\*

Hazlitt in his "Select British poets" gives this in the following form :

And on his breast a bloody cross he bore,  
 The dear remembrance of his dying Lord,  
 For whose sweet sake that glorious badge he wore,  
 And dead (as living) ever him ador'd :  
 Upon his shield the like was also scor'd,  
 For sovereign hope, which in his help he had :  
 Right faithful true he was in deed and word ;  
 But of his cheer did seem too solemn sad :  
 Yet nothing did he dread ; but ever was ydrad.

We would give it thus :

Vnd on hiz brēst e blodī kross hi bore  
 Thi dir remembrance av hiz dyng Lord,  
 For huz swit sek thyt glorjus bvdg hi wor,  
 Vnd ded, vs livis evor, him ydord :  
 Opan hiz shild thi lyk was also skord,  
 For sovren hop, whic in hiz help hi hvd ;  
 Rit, feifal, tru hi was in did vnd word ;  
 Bot av hiz ċir did sim tu salem svd ;  
 Jet nohtis did hi drēd, bot evor was idrvd.

Here we observe, in the first place, that the changes which we propose making in the *forms* of the letters are not as great as those which have already been made in them. And surely our reasons are more cogent than those in favor of changing the Gothic into the Roman forms. That was a mere matter of taste and convenience, this is one of necessity. The former merely required new forms, the latter calls for new facts, that is, for signs to designate sounds which have else no proper representatives. We do not alter a letter if we can avoid it, and only introduce a new one where it is indispensable if we would not have such a written language as the Hebrew is said to have been before its vowel system of points was invented. The fact is, the pronunciation

\*I am not sure that I have seen the first edition of the Faerie Queene, which was published in 1590. Books were then printed in Roman letters, but the black letter was in use in the beginning of the century.

of the English language is now very much a matter of tradition, and if something is not done for the improvement of its written forms we shall eventually have a confusion little short of what may be imagined to have prevailed at Babel when its impious builders looked in blank amazement at each other.

As to the changes in spelling we conceive that we are merely carrying out a reform commenced about the time of Spenser, but never perfected, nor conducted upon rational principles. It is undoubtedly better to change *ie* into *y* in *bloodie* and words of similar termination, and also to drop the final *e* mute in *crosse*, *deare*, *sweete*, &c. But ?\* why is not the same thing done in *bore*, *remembrance*, *whose*, *sake*, &c. ? Because the preceding vowel might be shortened in its pronunciation without it. But that reason will not apply to such words as *badge*, *true*, *have*, &c. and is at best but covering one fault (that of having several sounds to the same letter) by another.

Observe, secondly, that our first reformers of the English language made changes that were actually for the worse. ? Why was *breſt* changed into *breast*, or ? *ſoveraine* into *sovereign*, *hert* into *heart*, *vele* into *veil*, *feend* into *fiend*, and the like. Surely ? we may be allowed to correct these aberrations and make the language more consistent with itself.

Such a course has, to a limited extent, been pursued in defiance of the high authority of Johnson and other admirers of the blemishes of antiquity, in the rejection of *k* from *republick*, *u* from *honour*, and similar self-evident anomalies. Yet this very movement has been made by some a reason why we should stand still, and, doing nothing upon principle, let the language take care of itself and work out its own purification.

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#### ANT-IANA, NO. III.

The extraordinary habits of the ant cannot fail to interest all who have attentively observed them. The astonishing trait in the character of some species to have ants of another kind to perform the labor of mining, and rearing the young of those whose business seems to be that of committing depredations on their neighbors, is one that would almost stagger our belief, were it not confirmed by the observations of naturalists.

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\* The position of the note of interrogation has long appeared to me most unnatural. It is to denote the asking of a question, and requires the reader to modulate his voice accordingly, but placed at the end of a sentence, we must first read the sentence before we can do so. The reason for placing it where we have it is obvious.

In the present number I shall mention some facts which will further illustrate the observations made in No. 2.

About 5 o'clock in the afternoon of the 23d of July, whilst walking out, my attention was suddenly arrested by a considerable number of red ants, crossing the path before me. They moved rapidly in a compact body about six inches in width and from 18 inches to two feet in length.

After traveling in this manner a short distance in the path, they entered some thick grass and immediately disappeared. Being anxious to ascertain what had become of them, I pulled up some of the grass about the place, but was unable to find any traces of them, and thinking they might have gone through a hedge that was near, I passed round to examine, but was still unsuccessful in meeting with them. When I returned to the place where they had so mysteriously disappeared, I observed a number of ants coming out of the grass and running with great haste along the walk, each carrying a white *pupa* (the undisclosed young) in his jaws. Instead of the regular military manner in which they entered the grass, they now resembled a retreating army after an engagement, or a band of robbers hastening from a house they had plundered. They passed along singly or in straggling parties of two or three, keeping a direct line however, from which little or no deviation was noticed.

In the grass near where I lost sight of them, I found a small hole, out of which they were now issuing, laden with their booty. Continuing the line of their march diagonally across the walk, they entered the grass in the opposite side, where some difficulty was found in tracing them, but by removing the grass in advance, I was enabled to follow them about forty yards, where they entered a small hole in the ground, carrying their plunder in with them. When they had nearly all arrived and deposited their spoils, they again issued in considerable numbers from the nest, collected in a body, and commenced their march in a straight line towards the nest they had just plundered. In a few minutes they reached it, and, making the attack in a body, entered without any resistance from the occupants. It was not long, however, before they re-appeared, but not laden with *pupae* as before. Their retreat this time was more orderly than before.

I was unable to ascertain the reason why they left the nest this time without booty, unless they had totally stripped it on their first expedition, or had met with unexpected resistance within from the rightful owners, and thought it most prudent to retreat. During their absence the second time, I took occasion to examine their settlement, and found

that the ants left behind were smaller than those in the army and were of a darker color; the warriors being of a yellowish red.

Since that time I have frequently visited both nests and found the two species living harmoniously together, while the other is inhabited entirely by the smaller kind. The labor at that nest occupied by both species appears to be performed exclusively by the smaller ants, while the others render no assistance whatever in the domestic concerns, of the colony.

On the 31st of July I met with an army of the same species described above. They were marching in a direct course on a road or walk. The train was 3 or 4 feet in length and from 4 to 7 inches in breadth, forming a dense column gradually tapering towards the rear. There being a few straggling individuals along the line of their march, I was enabled to trace them back from whence they came, where I found a large nest of them in the edge of some grass. They marched in a very orderly and systematic manner, but before they arrived at the place of their destination, I was obliged to leave them.

I returned to the place about two hours after, but was unable to discern the train or ascertain what had transpired during my absence. This is the largest colony of this species I have discovered, and on examination, I find that it is inhabited by two kinds, one of yellowish red, and the others, which are smaller, of a dark red or brown color.

I have been much interested in observing the movements of this colony. When disturbed, they manifest a very pugnacious disposition, particularly the large species, which run about in a furious manner, biting whatever happens to be within their reach, and when they once seize hold of an object, they will suffer themselves to be almost killed, rather than relinquish their grasp.

There is one very singular fact connected with their movements when excited, which is, that when two of them meet, they invariably strike or cross their antennae, and when only one of them is excited before meeting, this interview imparts to the other the same hasty and furious movement; and this is communicated from one to the other, until the excitement becomes general throughout the colony.

In order more fully to satisfy myself of this fact, I took away one of the ants from a part of the settlement where I had disturbed them, and put it among those in another part, where they were frequently engaged in their labor. As soon as this ant came in contact with one of those at work, it too became excited and ran about in a furious manner, and in a short time this industrious scene was converted into one of confusion and disorder. I have never seen the large yellow ants parti-

icipating in any way in the labor of the settlement, that being altogether performed by the smaller, *darker* species.

RUSTICUS.

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EARLY LITERATURE OF THE GERMANS.

BY PROF. HENRY I. SMITH, OF HARTWICK, N. Y.

Every one, who is at all acquainted with the literature of our Fatherland, must be aware with what spirit and success the magazines of its earlier, and long forgotten productions, have been, of late years, explored, and what numbers of venerable, and highly interesting monuments, have been exhumed from the dust of centuries. Among the most important enterprises, directed to the discovery and publication of such ancient monuments of German literature, is the "Zeitschrift für Deutsches Alterthum," published since 1841, at Leipsic, and edited by Professor Moritz Haupt. This valuable publication has already made known a great number of interesting relics of the olden times of Germania. Among them are poems, fragments of epic poems, allegories, mysteries, tales, fables, and sermons. I doubt not that your readers would be much gratified, if some of these could be transferred to the pages of your valuable monthly. Unfortunately many of them, both poems and sermons, are written in Latin, so that *their* publication would afford but little satisfaction to the general reader; many others again are in a Gothic, Old-High-German, Frisian, or other antiquated dress; and I am sorry to say that, having no dictionary of these ancient dialects, I am unable to understand many of these perfectly, so as to enable me to give a complete translation. Sometimes there is, in several lines, but one strange word, which defies every effort to divine its meaning, thus destroying the connection, and obscuring the sense. It is impossible duly to appreciate these old and singular monuments, without a lexicon of the different dialects in which they are written. Were it not for these difficulties, I should be vastly tempted to bore you and your readers with translations of a number of these remnants of ancient Teutonic lore. Perhaps a few of the more tractable ones may not be unacceptable.

Your readers are perhaps, to some extent, familiar with the ancient Scandinavian mythes respecting the origin of the world. The Scandinavians conceived the materials for the production of the world and the earth to have been obtained from the body of an enormous giant, as we are informed by the Snorraedda and the Saemunderedda. Of this giant, called Ymir, the flesh furnished the earth, the bones the mountains, the skull the sky; from his blood was formed the sea, from his hair the

trees, from his teeth the rocks, and from his brain the clouds. Now, an old Frisian manuscript presents us with a cosmogony in which, with some admixture from the account given in the Bible, this order in the process of production is nearly inverted. The passage in this MS., of which I speak, is as follows: "God seôp thene êresta meneska, thet was Adam, fon achta wendem; thet bâneta fon tha stêne, thet flâsk fon there erthe, thet blôd fon tha wetere, tha herta fon tha winde, thene togta fon tha wolken, thene suêt fon tha dawe, tha lokkar fon tha gerse, tha âgene fon there sunna, and tha blêrem on thene helga ôm, and tha scope [i. e. scôp he, or seôp hi] Eva fon sine ribbe, Adames liana." Of this singular account, the following is a literal translation: "God created the first man, that was Adam, out of eight things; the bones of the stones, the flesh of the earth, the blood of the water, the heart of the wind, the thought\* of the clouds, the sweat of the dew, the hair of the grass, the eyes of the sun; and then he blew into him the holy spirit,|| and then he created Eve of his rib, Adam's companion."

Rather amusing is the manner in which the old Frisians here exhibit their knowledge of the human heart, by describing it as formed of wind: *varium et mutabile semper*.—Here then we have a strange blending of Scripture with heathen cosmogony: many such cosmogonies probably arose when the ancient inhabitants of northern Europe were first made acquainted with christianity. The correspondence between the extract given above and the Scandinavian mythe, is, with all its divergency, yet so obvious, that we find here, unquestionably, remains of an ancient Frisian cosmogony, clumsily interwoven with the Scriptural account of man's creation.

I confess that the ancient mythology of the Scandinavians, and of our Teutonic forefathers, has long interested me rather more deeply than that of the Greeks and Romans. It is not as poetical, as luxuriant, and splendid, nor as effeminate and impure, as the latter; it is more abstract, more stern and manly; more vast, lofty, and (if I may use the word in this connexion,) more colossal as a complete whole; more strictly connected, more consistent with itself; and yet abounding in endless, mysteriously interwoven, details, which, though they are so many branches, directly connected with the huge stem, it is exceedingly difficult to retain in the memory: much more so than the details of the Grecian mythology, which consist of many distinct and disconnected fables.

To any one desirous of taxing the powers of the memory to the utmost, I would recommend the study of the Scandinavian Mythology.

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\*Brain: Tr.

||Living breath: Tr.

## GRECIAN EDUCATION.

The most instructive writers on the subject of education, amongst the Greeks, are, unquestionably, Plato, Xenophon and Aristotle. In the republic of Plato there are very full and interesting exhibitions of his views. Xenophon in his *Cyropaedia*, or institutes of Cyrus, unfolds many instructive facts on the same subject. The manner in which the hero of his history, or romance, was trained, is given with considerable amplitude. Aristotle, in his *Πολιτικά*, leaves but little to be desired in regard to his own views, and the views of such a man cannot but be considered as invaluable. In the 7th and 8th books, the subject is discussed in detail. It may, however, be worth while to inquire whether anterior to the age of these eminent men the nations of Greece had in any degree turned their attention to mental and physical culture. Regarding Homer as the oldest Greek writer known to us, we may turn to his immortal productions to ascertain the sentiments prevalent in his time. The *Iliad* and *Odyssey*, those wonderful creations of a sublime genius, the admiration of past ages, the admiration of the present, and destined to be the admiration of men till the end of time, contain many incidental references to the process in vogue, in his own age and in those which preceded. That distinguished German writer on Pedagogics, Schwartz, in his comprehensive and learned work on the History of Education, cites numerous passages from the poems of Homer illustrative of the subject of education. Homer lived between 1000 and 900 years before the Christian era. He was educated by travel in foreign countries. He had, probably, visited Egypt, celebrated for its learning and science, at an early period. He was well acquainted with the people and cities around the Mediterranean. He is to us a guiding star of great value. How his own mind was disciplined in youth, to what subjects, more particularly, he attended, what impulses drove him from home, and what particular knowledge he sought, we have not even scanty materials to enable us to determine—but his communings were with animate and inanimate nature—particularly with men.

A correct opinion may be formed of his views, and of what he regarded as important, and of what prevailed in the times about which he wrote, from his epics. His works certainly present us with a true picture of men and things as he knew them by observation, or had learned them from history, or tradition.

The writer mentioned before has gleaned some intimations from the Homeric poems which are deserving of attention.

The hero of the *Iliad*, if hero it has, Achilles, was in his infancy entrusted to the care of Phœnix, who even in his old age was esteem-

ed by him. A fine passage pertaining to him is thus given in the celebrated translation of Pope,—celebrated for every thing but fidelity to the original :

Then Phœnix rose,  
 Down his white beard a stream of sorrow flows,  
 And while the fate of suffering Greece he mourn'd,  
 With accent weak these tender words returned :  
 Divine Achilles ! wilt thou then retire,  
 And leave our hosts in blood, our fleets on fire ?  
 If wrath so dreadful fill thy ruthless mind,  
 How shall thy friend, thy Phœnix, stay behind ?  
 The royal Peleus, when from Phthia's coast  
 He sent thee early to the Achaian host ;  
 Thy youth as then in sage debates unskill'd,  
 And new to perils of the direful field :  
 He bade me teach thee all the ways of war,  
 To shine in councils and in camps to dare.  
 Never, ah ! never, let me leave thy side !  
 No time shall part us, and no fate divide,  
 Not though the God, that breath'd my life, restore  
 The bloom I boasted and the port I bore  
 When Greece of old beheld my youthful flames,  
 (Delightful Greece the land of lovely dames,)  
 Your sire received me, as his son caress'd,  
 With gifts enrich'd, and with possessions bless'd,  
 The strong Dolopians thenceforth own'd my reign,  
 And all the coast that runs along the main.  
 By love to thee his bounties I repaid,  
 And early wisdom to thy soul convey'd.  
 Great as thou art, my lessons made thee brave,  
 A child I took thee, but a hero gave.  
 Thy infant breast a like affection show'd ;  
 Still in my arms (an ever pleasing load,)  
 Or at my knee, by Phœnix would'st thou stand,  
 No food was grateful, but from Phœnix' hand :  
 I pass my watchings o'er thy helpless years,  
 The tender labors, the compliant cares,  
 The Gods (I thought) revers'd their hard decree  
 And Phœnix felt a father's joy in thee.  
 Thy growing virtues justify'd my cares,  
 And promis'd comfort to my silver hairs.

Children were considered a blessing. Their endowments, derived from the Gods, were not uniform. The theory of Helvetius in regard to the equality of human intellect, was not consentaneous with the opinions of this acute observer of men and things. One is fitted for action, another for counsel, one for the battle field, another for the

deliberative assembly. In the *Odyssey* this matter is represented as follows :—

With partial hands the Gods their gifts dispense ;  
 Some greatly think, some speak with manly sense ;  
 Here heaven an elegance of form denies,  
 But wisdom the defect of form supplies ;  
 This man with energy of thought controls,  
 And steals with mode, and violence our souls ;  
 He speaks reservedly, but speaks with force ;  
 Nor can one word be chang'd but for a worse ;  
 In public more than mortal he appears,  
 And, as he moves, the gazing crowd reveres.  
 While others, beauteous as the ethereal kind,  
 The noble portion want, a knowing mind.

The liability of young men to go astray, is thus set forth :

The pendant chief with calm attention heard,  
 Then mildly thus : Excuse, if youth have err'd :  
 Superior as thou art, forgive th' offence,  
 Nor I thy equal, or in years, or sense,  
 Thou know'st the errors of unripen'd age,  
 Weak are its counsels, headlong is its rage.

That females were not uneducated may be inferred from the characters of Penelope, Arete and Nausika.

Supposing that the poet has transferred Grecian usage to foreign countries, and believing that he has represented things substantially as they were, notwithstanding the poetic drapery thrown around them, we must be convinced that education was not neglected, that children were trained with care, were caressed and fondled with tender affection, and fitted for that mode of life, which their institutions and relations rendered necessary.

Schools for boys were established after the Trojan war. The change in the manners of the people after the heroic age and the Argonautic expedition, leads to this view. Medical schools there were—one in the island of Cos, the birth place of Hippocrates, the father of Medicine, and one at Crotona in Italy—both of Egyptian origin. Knidus and Rhodus were likewise seats of such institutions, which were probably, in addition, designed for instruction in other branches of knowledge. Other references to education in the Homeric poems might be made, but we abstain. Before leaving him, it may not, however, be out of place to state that amongst the stories about Homer, many of which are sufficiently apochryphal, is this—that he himself exercised the pedagogical office at Smyrna (perhaps his birth place, though other cities

claim the honor,) till he was induced by Mentés, a foreign merchant, to depart from his fatherland, and like his own Ulysses make it true of himself,

Πολλῶν δ' ἀνθρώπων ἰδεὶν ἄσπερα, καὶ νόον ἐγνῶ. *Odys. Lib. 1. 3.*  
 Vieler Menschen Städte gesehn, und Sitte gelernt hat. Voss.

---

BROOKS' ROSS' LATIN GRAMMAR.

*A Latin Grammar*—by JAMES ROSS, L. L. D., edited by N. C. BROOKS, A. M.,  
 Professor in the Latin High School, Baltimore, Md. Philadelphia: Thomas,  
 Cowperthwait, & Co.

JAMES ROSS was undoubtedly one of the most thorough classical scholars, and one of the most successful teachers of his day, and the service which he rendered to classical literature in this country, cannot be too highly estimated. His Latin Grammar is a highly interesting and valuable work, if we consider it only as the exponent of his system of instruction. But besides this, it has high merit. It is short, clear, practical, and, what all elementary works of this kind ought to be, a book that can be committed to memory without exacting from the scholar any greater effort than will be beneficial to him.

But that Ross' Grammar is not perfect, and that Latin philology has made some progress since his day, (we are almost ashamed to acknowledge how little,) we may take for granted. Ross' work is a purely elementary one; although it contains all the grand and prominent facts of the language, it does not enter into the region of higher criticism, or give its results, or unfold the philosophy of the language. In addition to this, it is not sufficiently systematic in its arrangement. Thus, the rules for the declension of nouns, variation of verbs, &c. are divided and thrown into very different parts of the book, and what is still more objectionable, the definitions of various terms of frequent recurrence, such as "*simple, collective, verbal, partitive,*" &c. is put into an appendix which comes long after the student has had frequent occasion to use these terms.

These and similar imperfections Prof. Brooks has very satisfactorily remedied, and having remodeled the whole work, has succeeded in bringing order out of confusion, and has thrown a great deal of light upon the subject, and given material assistance to the young student in wending his way through the mysteries of Latin Grammar. But he has done more than merely re-arrange the materials of Ross, he has added a great deal of valuable matter which the original work did not contain. As instances of this we may mention his additional examples in the declension of nouns, his chapter on Latin idioms, and the prosody.

But as the subject of Latin Grammar is of great importance, it being the key to the almost exhaustless stores of the literature not only of the ancient Romans, but also of all modern and christian nations for nearly eighteen centuries past, and in particular intimately connected with our own language, of which it forms so large a constituent part, we presume that we shall meet with indulgence from the readers of the Record generally, and especially from those engaged in the prosecution of classical studies, in offering some remarks upon various topics here presented to our consideration.

In the first place, we are compelled to differ somewhat from Prof. Brooks in regard to the *pronunciation* of the Latin language. It is true, that we cannot determine with precision the sounds indicated by several letters, but of one thing we are certain, viz. that the English is the very worst standard of pronunciation that could be taken. In fact the English language has no settled pronunciation of either vowels or diphthongs. This is shown clearly enough by the directions given by different English authors for the pronunciation of Latin. Thus Dr. Ross says that *a* is to be pronounced short as in *man*, or long as in *star*. Prof. Brooks says that it has the sound of *ah*, whether long or short, whilst Andrews and Stoddard declare, that when *a* is accented, it is sounded as in *fatal*, (they do not say which syllable, but we presume they mean the first, as they call it the "*long English sound*,") but when unaccented they wish it to be pronounced like *a* in *father*. We might point out similar discrepancies in the rules laid down by these and other writers for the pronunciation of nearly all the vowels. What then is the teacher to do? Or is this a matter of no importance? No one can doubt that it is desirable for us to approach as nearly as possible to the pronunciation of the Latins themselves at the time when the language which we study was spoken in its greatest purity, and I would also suggest that a correct pronunciation of the Latin may be made to facilitate our acquisition of the modern languages of continental Europe, as well as to assist in correcting the lamentable anomalies of our own written system. Let us adopt the universally acknowledged sounds of the Roman vowels, both in Greek (where Dr. Anthon has already led the way to their introduction, by adopting them in his Greek grammar,) and in Latin, and we shall not only have a key to all the leading languages of continental Europe, (with the exception of the French, which stands nearly as much in need of a reformation as the English,) but we shall likewise prepare the way for the reception of these sounds as properly indicated by their ancient signs, in our own language. Surely there would be no difficulty in introducing into our schools so simple a sys-

ten of pronunciation as this: A=*a* in *father*; E=*e* in *ere* or *prey*, or *a* in *name*; I=*i* in *marine*; O=*o* in *no*; U=*u* in *rule*; Y=*y* in *hasty*, or in the French *u*, or German *ü*. All vowels being considered as *short* by nature, when they are *long*, the same sound is merely continued for double the time required to pronounce them when short. As regards the diphthongs let æ=*ay* in *hay*, with a slight elevation of the *y*; œ=*oy* in *boy*, but as short as possible; au=*ou* in *pound*; ei and eu=*i* in *pine*; and the other diphthongs as a combination of the short sounds of the two vowels of which they are composed, rapidly uttered, except when they end in *i*, and are followed by a vowel, when i=*i* in *union*. It would extend these remarks too far to give the grounds of these positions, but we hope that Prof. Brooks, in his next edition, will take these things into consideration.

Another point to which we beg leave to direct the editor's attention, is, the improvement of the versification of the English rules for gender, declension, &c. We are decidedly favorable to this old-fashioned way of learning rules—it is easy to acquire and easy to retain, and has also the advantage of fixing the very words of the rule in the memory. We are not in favor of committing every thing to memory, and carrying on education altogether by its aid, but where it is employed (and we have no hesitation in saying that it ought to be employed extensively,) it should have every advantage, and be strengthened as much as possible. On this account, also, we are favorable to the metrical rules and examples in Latin, believing that it will not only be easy to retain them when they have once been committed, much easier at least than in an unconnected order, but that it is highly desirable that the student should acquire as large a fund of Latin words as possible. But we suggest to Prof. Brooks, the remodeling of many of the English rules, being assured that his poetical talents especially fit him for this work—though it would require very little skill to improve such doggerel as the “first general rule.” Only correct the grammatical impropriety of “what nouns denote,” &c., and we have a tolerable verse. Instead of objecting to these rhyming rules, we could wish that there were more of them, and that the rules of syntax, at least, were in this form, for then we should not be afraid of hearing applicants for the degree of A. B., so completely confound rules and exceptions, as they sometimes do. But we must defer the remainder of our remarks upon these topics to another occasion.

(To be continued.)

## STEVENS' TRAVELS IN CENTRAL AMERICA.

*Incidents of Travel in Central America, Chiapas, and Yucatan.* By JOHN L. STEVENS. 2 vols. Harpers, 1841.

This expedition of our countryman, was undertaken under the auspices of the general government. To the importance which this circumstance gave the traveller, he was indebted for much of the success which crowned his labors. Under all circumstances, one would suppose that an official character, endorsed by his government as worthy of confidence, would necessarily secure for himself, in a foreign country, the highest degree of consideration.

The style of this work, like that of his travels in the East, is sprightly and unaffected; sometimes, when under the influence of deep feeling, awakened by the contemplation of the wondrous works of art, which are concealed in the forests of Central America, his manner becomes serious, and his style rises into the region of the sublime. Solemn, indeed, must have been his feelings when standing on the ruins of Copan, with the monuments of a powerful and civilized people strewed around for many miles and under his feet. He would naturally look with an inquiring glance into the past, and ask, where are now the people powerful and wise, who once occupied these palaces, and erected to their gods these monuments of art which rival in magnitude and finish the glory of Egypt? Who were they? Whence did they come, and whither have they gone? Surely the fashion of this world passeth away and its glory is but dust!

It is not our purpose to moralize for Mr. Stevens, nor to follow him through his laborious travels. Suffice it to say, that whoever will undertake the journey through two pretty thick royal-octavos will be amply rewarded for his labors. I know not how it has happened that our traveller met with so many trying and dangerous accidents by the way, and contrived to extricate himself unhurt out of them all. He certainly possesses diplomatic tact, and withal as deep a vein of good nature as ordinarily belongs to bachelors.

The work is illustrated by numerous and well-executed engravings, which give evidence of patient and minute investigation. These must certainly be regarded as indispensably necessary to the elucidation of the work. They constitute in fact the work, and the narrative is but the history of the labor and pains employed to procure them, and some little insight into their character derived from their relative location and a few apposite conjectures. Here we have the written language of the people. But who will interpret for us? Who will read for us the dark hieroglyphics, the death's heads, and strange fantastic figures, which

cover their statues and walls? May we not hope that some Champollion will speedily arise and unfold the scroll which contains the history of this mysterious people?

The common opinion refers these remains of a great people, together with kindred monuments found elsewhere, to a high antiquity, and to a people deriving their knowledge and taste in the arts from the east. From this view Mr. Stevens dissents, and furnishes reasons sufficiently numerous and powerful to convince any prejudiced mind. No one, after having read the history of the conquest of Mexico by Cortez, and the reference to splendid cities and monuments of art of every description, which the conquerors found in Mexico and Central America, will fail to arrive at any other conclusion than this—that the nations then occupying those countries, or their immediate predecessors, were the artificers of these curious and wonderful works. The conviction appears to be strong in the mind of Mr. Stevens, that the descendants of those who erected the cities whose ruins he describes, are yet living: some scattered through the original land of their ancestors, whilst others, perhaps, retain their former independence and glory. He was informed by a padre, in whose veracity he placed confidence, that there exists a city and region of country, unconquered by the Spaniards, and retaining all its primitive character and manners, unadulterated by admixture with foreigners. The padre had seen it, from the top of the Cordilleras, with its turrets and spires glittering in the sun, but its streets have never been trodden by the foot of the white man. Here, then, may be found the key to unlock the hidden mysteries that lie entombed in Copan, Palenque, Quiragua and Uxmal. May we not hope that the government, as well as individual citizens, will manifest a deep interest in this subject; and that they will rescue from destruction what the avarice and bigotry of the Spanish conquerors have spared?

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#### CABINET OF THE LINNEAN ASSOCIATION.

It is truly gratifying that the enterprise of collecting a cabinet for Pennsylvania College, has thus far succeeded so well. There was a small collection of minerals and a few articles of no particular interest in the room of the library, for several years, but the real commencement of the operations now so successfully carried on, is to be dated from last July. The Linnæan Association was established a short time previous, and then it was determined to proceed in the collection of a cabinet. The active members deserve much credit for their industry, and we hope that they will not cease to labor until they have secured a very

large and valuable collection. They are indebted to several corresponding members and other gentlemen for valuable donations, and they are still receiving additions.

To give the readers of the Journal some idea of the collection, the curator has obligingly furnished me with the following list. It will be seen that it is yet comparatively small, but be it remembered that it was begun last summer.

Birds, native and foreign 63; Reptiles in spirits and stuffed 92; Fishes and *Crustacea* (crabs,) 97; *Mammalia* 10; Shells 900; Insects 1100; dried plants 40; Minerals 2100; Fossils 60; Anatomical preparations 13; Paintings and Engravings 35; Plaster casts 70; besides a large number of miscellaneous natural and artificial curiosities.

This is doing well for six months, and I happen to know that before long the cabinet will be considerably increased. Most of these objects are scientifically arranged and properly labeled, so that they are not designed for mere show, but for study and practical use. They are all preserved in cases covered with glass and secured with locks, so that the uninitiated may not handle them carelessly.

The cabinet is at present kept in the library department of the College, but if it increases at this rate, there will soon be felt the necessity of more room. In view of this, the Society last summer adopted preliminary measures towards erecting a building to be specially appropriated to this and kindred objects. One or two large departments would be necessary for the cabinet, one as a sort of work-shop or preparation room and for duplicate specimens, and one as a library and reading room. Use could easily be made of four or five departments. The members very industriously set themselves to work to procure subscriptions, in which they were successful among themselves, but it is very evident that it is out of the power of the students, most of whom are in very moderate circumstances, to erect the buildings. The college treasury has no funds to spare for the purpose, and the Linnæans have appealed to the friends of the College and of science for aid.

I do not know to what extent they have succeeded, but I hope they will not abandon the enterprise. A few years of toil will enable them to accomplish the ardently cherished project. When the friends of education once see that the Linnæans are not to be daunted by seeming difficulties, efficient help will be afforded. I would say then, go on and never give up the enterprise—you will eventually succeed.

The money already subscribed, should be collected and husbanded until enough has been secured to justify a commencement.

Those interested in the success of Pennsylvania College, must see

that the Professors and Students of that institution are resolved to do what they can in maintaining an elevated stand in promoting the cause of thorough education. The appearance of this Journal is a cheering token for good; the zeal of the Linnæans in embellishing the adjacent grounds, and rendering access to the College pleasant and easy; their laudable ambition to enlarge the cabinet, library, and the *materiel* of their cherished school, all display a most commendable spirit, which I believe will be warmly seconded by others. I entertain the hope of seeing the corner stone of the Linnæan Hall laid next summer. I shall be there to pay my contribution, and invoke God's blessing on the enterprise.

POLITES.

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COLLEGE RECORD.—The fourteenth Anniversary of the Phrenakosmian Society, was celebrated in Christ's Church, Gettysburg, on the 21st ult. The performers acquitted themselves in a manner highly creditable to the Society, and to the Institution. The influence of these literary associations upon their members and upon the community, both in College and beyond its walls, is evidently of the most salutary character. The large assembly convened upon this occasion, listened with the most marked attention to each of the speakers, and we have no doubt that they were alike interested and improved. We were pleased to see an unusually large number of persons present from the surrounding country. The Society itself appears to be improving externally as well as internally, if we may judge from the handsome manner in which they have recently fitted up their hall, from which they marched in procession to the church. The vocal music given upon the occasion, by a select choir, added, in no small degree, to the pleasure of the evening. The following was the order of the exercises:

PRAYER by Prof. JACOBS. Oration—"The Universal Deluge"—by J. P. SMELTZER, Frederick Co. Md. "The Christian Missionary"—by G. J. MARTZ, Frederick Co. Md. "The Sublimities of South America"—by R. A. FINK, Frederick, Md. "The first Martyr and the first Murderer"—by C. A. BROUGHNER, Tippah Co. Miss. BENEDICTION—by Rev. Dr. KRAUTH.

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TO CORRESPONDENTS. "Philorusticus" is informed that his communication with the reply of "Rusticus" will appear in our next number.—Those who write for the Journal will please to bear in mind, that they cannot write too legibly; all our matter being in manuscript it will lighten the labor of both printer and editor to have each letter as plain as possible.



# Pennsylvania College, Gettysburg, Pa.

## FACULTY AND INSTRUCTORS.

- Rev. C. P. KRAUTH, D. D.—*Pres't and Prof. of Ev. of Christ., Moral Science, &c.*  
Rev. H. L. BAUGHER, A. M.—*Prof. of Greek Language, Rhetoric, &c.*  
Rev. M. JACOBS, A. M.—*Prof. of Mathematics, Chemistry, &c.*  
Rev. W. M. REYNOLDS, A. M.—*Prof. of Latin, Mental Philosophy, &c.*  
M. L. STOEVEK, A. M.—*Prof. of History and Principal of Preparatory Department.*  
Rev. CHAS. A. HAY, A. M.—*Prof. of German Language and Literature.*  
DAVID GILBERT, M. D.—*Lecturer on Anatomy and Physiology.*  
Rev. J. G. MORRIS, D. D.—*Lecturer on Zoology.*  
WM. ALBAUGH, A. M.—*Tutor and Teacher in Preparatory Department.*  
MR. H. R. GEIGER.—*Teacher of Writing.*

PENNSYLVANIA COLLEGE has now been chartered about fourteen years. During this time its progress has been such as to gratify the most sanguine expectations of its friends. The course of studies is as extensive and substantial as that of any Institution in the Country. The *Preparatory Department* provides for instruction in all the branches of a thorough English, business education, in addition to the elements of the Mathematics and Classical Literature. The *College Course* is arranged in the four classes usual in the Institutions of this country.

The government of the students is as energetic as their circumstances seem to require. They attend at least two recitations a day, Church and Bible Class on the Sabbath, and are visited in their rooms so frequently as to preclude the danger of any great irregularities. It is believed no Institution in the United States has more exemplary young men in connexion with it. They are all required to lodge in the College Edifice, special cases excepted.

The annual expenses are—for board, tuition and room-rent, during the winter session, \$61 87½; for the summer session, \$41 87½. Washing, \$10 00; and Wood, \$3 00. Total expense, \$116 75. Boarding can be obtained in town at \$1 25 per week.

There are two vacations in the year, commencing on the third Thursdays of April and September, and each of five weeks continuance.

The winter session commenced on the 24th inst, with the accession of about twenty Students in the Freshman Class, admitted at the close of the summer session, and a respectable number of applicants for admission into the Preparatory Department.

## Acknowledgements of Donations to the Cabinet of the Linnæan Association of Pennsylvania College.

February, 1845. From *Wm. R. Grant*, M. D. Prof. of Anatomy, Pennsylvania College, Philadelphia, one large box containing birds, and a case of insects.

2. From *Miss M. Paxton*, of Caledonia Furnace, specimens of iron-ore, and a lizard in spirits.

3. From *Mr. John M. Stevenson*, Sen. one rare coin.

4. From *Wm. J. Miller*, one Turkish pipe.

5. From *Mr. Greenawalt*, Pinegrove, one Indian pipe.

6. From *M. M. Yeakle*, some rare specimens of silver and copper coins.

7. From *J. A. Bradshaw*, seventeen drawings.

8. From *R. A. Fink*, one reptile in spirits.

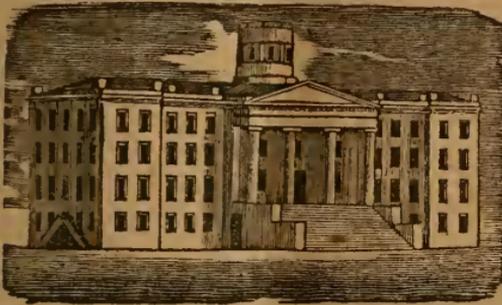
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THE  
**LITERARY RECORD AND JOURNAL**

Of the Linnaean Association of Pennsylvania College.

APRIL, 1845.



CONDUCTED  
 By a Committee of the Association.

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1½ sheet, periodical—Postage, 100 miles 2½ cents, over 100 miles 3½ cents.

NEINSTEDT, PRINTER, GETTYSBURG.



THE LITERARY  
**RECORD AND JOURNAL**

OF THE LINNÆAN ASSOCIATION OF PENNSYLVANIA COLLEGE.

VOL. I.

APRIL, 1845.

No. 6.

METEOROLOGY, NO. VI.

INDIAN SUMMER.

BY PROF. JACOBS, OF PENNSYLVANIA COLLEGE.

3. *Whence the haze or smoke, which so frequently destroys the perfect transparency of the atmosphere, and which is so characteristic of the "Indian Summer?"*

In reply, it may perhaps be best to state, first, what it is believed to be, and secondly, under what conditions of the atmosphere it is found to exist.

That the *cause* of the obscuration of the atmosphere in the case in question is due to *moisture* and not to actual *smoke*, will appear from the consideration of a few facts. *First*, the morning fogs, especially those of August, when not followed by immediate rain, instead of being dissolved in a pure clear sky, during the day, by the increasing solar heat, are mostly found to produce an obscurity like that of a dense smoke. *Secondly*, both the cirrus and dense nimbus cloud, after having been wafted overhead by upper currents, have frequently been found to be rapidly dissipated, rendering the sky obscured as by a dense smoke, instead of leaving it nearly transparent as it was before. *Thirdly*, such states of atmosphere are mostly broken up by copious rains, which are succeeded by a clear sky. So constantly is this the result, during the summer months, that a smoky sky is generally considered as a sure indication of approaching rain. And *fourthly*, the quantity of moisture in the atmosphere, at such times, as indicated by the dew-point, is greater than the average due to the prevailing temperature. These are some of the facts which may be adduced to prove, that the obscurity of the sky, in the cases cited, is due, not to real smoke, but to vapor; or in other words, that it has no relation to the existence of extensive fires, as is generally believed. The existence of extensive fires at such times is purely accidental, being favored by the greater inflammability of combus-

tibles, in consequence of a partial failure of rain, which then takes place. The recently fallen foliage of Autumn, affords peculiar facilities for the prevalence of extensive fires during the season of the "Indian Summer."

We must therefore regard, what is ordinarily called *smoke* and *haze*, as very thin cloud. Sometimes this is seen at some elevation in the air, in a great measure disrobing the sun, moon and stars of their splendor, and producing that mild subdued light witnessed in an atmosphere denominated *hazy*. At other times it prevails more abundantly near the surface of the earth, producing that peculiar appearance of objects seen through it denominated *smoky*. It is generally found to become denser during the night, or early in the morning, in consequence of diminished temperature; and then, during the day, again to become more rare in consequence of the increased temperature of the air.

The *mechanical condition* of the atmosphere accompanying that kind of weather called smoky, is that of comparative rest. During the continuance of this kind of weather, the movements in the atmosphere are feeble, as the most superficial observation will show. The winds, if there be any, are always gentle, except sometimes for a few hours at the commencement. The temperature, also, during the twenty-four hours, is not subject to much variation. But when we leave superficial observation, and have recourse to the indications of proper instruments, we become better satisfied of the truth of the remark just made. The barometer, for example, is slow in its movements, and does not rise much above or fall much below its *mean* altitude. Any considerable rise or fall is accompanied by a corresponding change in the transparency of the air. The criterion is, that, during the prevalence of any smoky season, the pressure varies within comparatively narrow limits.

Now this approximate equilibrium in the atmosphere over any section of country for several days continuously, is, no doubt, the cause of the destruction of its transparency. For it is a matter of observation, and consequently one of the *facts* of the case, that the murkiness of the atmosphere increases with the continuance of its comparative quiescence, and the density of the former is proportionate to the nearness of the latter to a perfect equilibrium.

Agreeably to the principles laid down in No. IV, that form or kind of cloud called smoke can be formed extensively in the atmosphere only during a partial equilibrium of forces. When either the temperature or pressure varies rapidly, the resulting equally quick movements favor the rapid condensation of invisible vapor into dense cloud and rain, by which the moisture is withdrawn from the atmosphere, or bear

it off to some other district of country. But when these disturbing causes are feeble, as when the air is nearly calm, and the daily change of temperature is inconsiderable, the gradually increasing moisture, instead of being suddenly condensed into ordinary cloud, begins to condense in the form of exceedingly minute particles. These at first only lightly destroy the transparency of the sky, but as they increase in number and size, they render it more dusky until, at length, they very much resemble an ordinary fog.

If we suppose the temperature and pressure to remain unchanged for only a month or two, the effect would become most striking and extraordinary. There would be no horizontal or vertical currents to form ordinary cloud and rain, and thus to withdraw the moisture from the air. The vapor, being constantly increased by evaporation from the surface of the earth and ocean, would first form the thin cloud, scarcely destroying the transparency of the air, then the dense smoke of Indian Summer, and then, when the point of saturation would have been reached, an uninterrupted night of ordinary cloud. That the obscurity during the Indian Summer, or any of the other periods of similar weather, is not greater than it is, especially when it continues for two weeks, is owing to the fact that the equilibrium of forces is not perfect, but only comparative, and that the atmospheric movements, though feeble, are constantly interfering; and that there is much less obscurity at one time than another, is owing to the greater activity of the disturbing forces. The whole year is but a struggle between the efforts of the invisible vapors to aggregate themselves together in such a manner as to hide the face of the heavens entirely and continuously, and of the atmospheric movements to disturb and break up such a state of things.

It is during such times, viz: when the air is slightly obscured by this thin veil of vapor, that the phenomenon of the "diverging beams," or, as it is vulgarly called, "the sun drawing water," may be seen.—When there are small masses of cloud floating above, through the intervals of which the sun's rays may pass towards the earth, the particles of vapor intercepting and reflecting a portion of light, enable us to see them in luminous lines, in the same manner that we see illuminated lines of particles of dust floating in a room into which the light of the sun has been admitted by a window. The "diverging beams," indicate the existence of increasing moisture in the lower strata of the atmosphere, and are not without reason regarded as a sign of approaching rain.

An interesting example illustrative of our subject occurred during the month of March, 1844. For four days, beginning with the 25th,

the barometer stood nearly at its mean; its oscillations amounted to no more than .05 of an inch, and the brisk winds, which arose in the earlier parts of the 25th and 26th, but which in each case died away in the afternoon, and at night were attended by the formation of considerable masses of cumulus cloud. The formation of the cloud was due to the yet comparative activity of atmospheric movements. But whilst in these two days the smoke-cloud had already considerably darkened the sky, on the 27th, which was calm, the smoke increased rapidly in density; so that with the decline of the temperature during the evening and night, it had thickened into something like a fog, which at 9 o'clock, P. M. was so dense as to hide the moon and stars, and on the following morning was found to be *wet fog* extending upwards to a considerable distance from the earth. This, on the 28th, continued during the day as fog, and on the 29th and 30th, came down upon the earth in heavy rains.

This example has been selected, not because it is in any wise peculiar, for similar cases occur frequently during the year; but because particular attention had just happened to be directed to it. Neither have we confined our attention to the "Indian Summer," which has given this article its caption, because in endeavoring to explain the philosophy of smoky weather in general, we have been explaining each particular phenomenon of the kind. In doing this, we think we have proved that the *smoke* so called, is merely thin cloud, and that it owes its existence to a comparative quiescence of the atmosphere at the time. It remains yet to account for these seasons of quiescence.

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#### THE SOLEMNIZATION OF MATRIMONY AMONG THE ANCIENT GERMANS.

BY PROF. HENRY L. SMITH, OF HARTWICK, N. Y.

Among our Germanic forefathers it was long before the church obtained the right of solemnizing and legalizing marriages—and longer yet before she attained to the actual exercise of this right. Our readers may know, that, in the eighth century, the secular powers (in Germany) agreed with the church, thenceforward to make the legality of marriages dependent on the evidence (*Mitwissenschaft*) and blessing of the priest; and yet it is equally well known that this arrangement was entirely ignored throughout the whole period, which we call the "Middle Ages," until, at length, the church enforced its claims, founded, unquestionably, in christianity itself, and the people every where submitted, and accustomed themselves, to exchange the common, purely civil,

betrothal or espousal, for the sacred marriage-ritual of the church. Yet, at first, the latter was only regarded as the full and final consummation of the former.\* The necessarily concomitant result of this long conflict between ancient right or usage, and new law, was the progressive abridgment of those non-ecclesiastical formalities, by which, according to old-German custom, the betrothal was confirmed: and the gradual lapse of these ancient formalities, to the lower and lowest classes of the people, was but the prelude to their entire disappearance. Favorable circumstances have preserved a considerable number of records and literary monuments, which plainly exhibit this gradual process, at least from the 12th to the 15th century.

To the 12th century belongs the formulary, first published by Massmann, of the betrothment of free (distinguished from serfs) Suabians. On this interesting document I shall here say no more, merely observing that it makes no mention of the consent and blessing of the church.

In the 13th century, the poets who flourished at courts, and in the mansions of the nobles, whenever they give an account of a wedding, never forget to record, at the same time, the solemnization of the marriage through the priest, or, at least, the profession publicly made before the congregation: yet not as though this *benedictio*, and this *pro-fessio*, had been indispensable conditions, but merely because they were regarded as becoming and auspicious. The popular poets, on the other hand, speak only of betrothals in the presence of lay-witnesses, and, in this age also, of the *consent* of the *bride*, who, in the preceding, appears altogether passive. The custom, which then already prevailed, for the parties, shortly after their nuptials, to attend church together, appears to have had no reference to the church's blessing.† This distinction, then, presents to us the non-ecclesiastical betrothal as an ancient usage, now already becoming limited to the lower classes, and among them, even, suffering abridgment through the concession implied in their post-nuptial visit to the church; and the solemnization of matrimony by the church, as a new, and strange requisition, to which the higher classes of society begin to accommodate themselves. The marriage-ritual, in use, at that period, among the lower classes, is most vividly exhib-

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\* It is well known that, even at the present day, it is the custom in Germany, that, when two young persons have agreed together to become companions for life, their betrothal, in the presence of their two families, precedes their actual marriage-union, sometimes a few days, often several weeks or months, and not unfrequently even several years.

† This custom is still strictly observed in many parts of this country, by descendants of Germans.

ited in a poem, entitled "Der Meier Helmbrecht." The poet describes the marriage of a robber, Lämmerschind, and Gottlinde, a farmer's daughter, (1507. sqq.)

"ûf stuont ein alter grise ;  
 der was der worte wise,  
 der kunde sô getâniu dinc.  
 er stalt es beide in einen rinc,  
 er sprach ze Lemberslinde  
 'welt ir Gotelinde  
 êlichen nemen? sô sprechet Jâ.'  
 'gerne,' sprach der knabe sâ.  
 er vrâgte in aber anderstunt,  
 'gerne,' sprach des knaben munt.  
 zem drittenmâle er dô sprach  
 'nemt ir si gerne?' der knabe jach  
 'sô mir sêle unde lip,  
 ich nime gerne dize wip.'  
 dô sprach er ze Gotelinde  
 'welt ir Lemberslinde  
 gerne nemen zeinem man?'  
 'jâ, herre, ob mir sîn got gan.'  
 'nemt ir in gerne?' sprach aber er.  
 'gerne, herre! gebt mirn her!'

Zem dritten mâle 'welt irn?'

'gerne, herre! nu gebet mirn.'  
 dô gap er Gotelinde  
 ze wîbe Lemberslinde,  
 und gap Lemberslinde  
 ze manne Gotelinde.  
 si sunge alle an der stat,  
 ûf den vuoz er ir trat.

## TRANSLATION.

Up rose an aged man  
 Who had a ready tongue,  
 And thus he joined the twain.  
 Within a circle he both did place,  
 And then to Lemberslinde spake :  
 'Wilt thou Gotelinde take,  
 For thy wedded wife? Then say me yea.'  
 'Most willingly,' the youth replied.  
 He asked again the second time :  
 'Most willingly,' rejoined the youth again,  
 The third time thus once more he spake :  
 'Dost take her willingly?' 'ay,' responds  
 'Dear as my soul and body, [the youth,  
 Most gladly do I take this wife.'  
 And then he spake to Gotelinde :  
 'Wilt thou willingly take Lemberslinde  
 Thy wedded husband aye to be?'  
 'Yea, sir, for better or for worse !'  
 'Dost take him willingly?' again he asks,  
 'Ay, sir, with good will! give him now  
 to me.'  
 The third time doth he ask; 'wilt have  
 him, say?'  
 'Ah, willingly, sir! now do give him me.'  
 Then gave he Gotelinde  
 To be wife to Lemberslinde,  
 And gave Lemberslinde  
 To be husband to Gotelinde.  
 And now they all did join in song,  
 But he\* did step upon her foot.†

Here, then, neither the parties interested, nor the poet, are at all concerned at the absence of an officiating ecclesiastic : but here already, the whole solemnity of the transaction depends on the thrice repeated question, and on the bridegroom's stepping on the bride's foot, thereby indicating the assumption of possession and authority, according to an ancient custom and statute. (From an ancient collection of popular poems we learn, that any one, stepping on a sorcerer's foot, thus possessed himself, and deprived him, of his power of vaticination.) Thus much for the 13th century. The scene of the poem, from which the

\* The bridegroom.

† It will be observed that I have taken liberties with two or three lines.

above extract is given, is in Austria. Of the 14th century we have a poem celebrating the marriage of Metzen and Betzen, who abode in Suabia. Respecting this, I have only space to say that the poet represents the officiating person as winding up the ceremony with saying:

“Thus have ye been transferred into wedlock,  
Without scholars, and without priests.”

Every thing else is perfectly regular, and the whole affair is a highly respectable one. But the point here most important to us is, that, on the morning after the nuptials, the parties wend their way amidst a joyous throng of guests, to the church, where, after the close of the public worship, they are once more solemnly joined in wedlock by the priest. Thus in the same country, in which, in the 12th century, the right and custom of betrothal was still in full, unquestioned, force, in the fourteenth century, the solemnization of matrimony by a clergyman, is, even among the lower classes, regarded as legally better, nay apparently considered necessary, in addition to the ordinary betrothal.

Similar accounts respecting other parts of Germany, I must omit for want of space.

I reluctantly omit, also, for the same reason, a very interesting document belonging to the same period, and extracted from the statutes of the city of Cologne. This document presents, in very antiquated language, a complete formulary for the solemnization of matrimony, concerning which, I have only space to remark, that it does not at all specify to what class or profession the officiating person must belong; but merely prescribes, that whosoever shall join together two persons in wedlock, shall use the following formulary.

Thus, then, the 13th century is, in this respect, as in so many others, the critical point of decision, the period of transition—from things old to things new; in the 15th, the victory of the church's right is complete, and the solemnization of matrimony (now even viewed as a sacrament,) entirely given up to the clergy. The manner in which the ceremony was performed by the clergy, and the fact, that they occupied merely canonical ground, we learn from a rule or direction *Ad copulandum*, designed for priests, which has been preserved in a MS. at Breslau. I prefer retaining the monk-latin of the rubric, merely translating the questions, which are in old German, and would probably be unintelligible to most of your readers.

“Postquam veneris ad locum copulandi, primo interroga nomina eorum, dic primo ad virum, ‘Petir, hast thou come hither that thou wilt take Catherine for thy wedded wife?’ post responsionem sui, scilicet viri, Reverte te ad virginem, et conclude eadem verba dicens, ‘Cathe-

rine, hast thou come hither, because thou wilt take Petir for thy wedded husband?" Post responsionem interroga virum de periculis instantibus, utrum ipse habet uxorem, vel promiserit alteri, et de propinquitate seu amicitia. Si non dabit responsionem quo ad periculum, tunc interroga virginem eadem verba similiter quo ad virum fecisti; et tunc publice interroga omnes circumstantes, si sciunt de periculo futuro; quod dicunt manifeste, et postea taceant, post hoc accipe manum dexteram viri et dexteram virginis, et conjunge eas adinvicem, et dic ad virum illa verba:—"Repeat after me, Petir. I, Petir, take thee Catherine for a wedded wife, and promise thee that my faithfulness shall be toward thee and provide for thee," et dic ad virginem, "Repeat after me, I Catherine take thee Petir for a wedded husband, and promise thee that I will render thee my faithfulness and obedience unto mine end."—Et audi quod verba supra dicta non mutant, quo facto dic secreto modo hæc verba, 'Quos deus conjunxit homo non separet,' et dic 'Ego conjungo vos in nomine patris et filii et spiritus sancti.' Et sic percute eum supra scapulas etc, recede."

Here there is retained, at least, a popular symbol, i. e. the blow on the shoulder in order to aid the memory, for which purpose it was also customary, even according to statute, to box the ears. It may also be observed that the form here given is, *substantially*, the same which is still in use among us.

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A LETTER FROM A YOUNG ENTOMOLOGIST, WITH THE REPLY.

DEAR RUSTICUS,—Happening once to be in a forest, and wandering, I knew not whither, I came to a small tree, upon which seeing considerable motion, I approached nearer and perceived that it was occasioned by two different kinds of little animals, the movements of one of which were defensive whilst those of the other were aggressive. The aggressors were your little friends, the ants, and the aggrieved were a species of small caterpillars, which yet, however, were seven or eight times larger than their determined invaders. The onset must have been made some time before we arrived, as the caterpillars had mostly forsaken their lodging and were scampering off, as well as caterpillars can scamper in all directions. They seemed to be aware that their caterpillar existence depended upon their speed. Some had suspended themselves by threads beneath the branches to get out of the way of their adversaries. Many, however, had been unfortunate enough to fall to the ground, or rather fortunate enough, for they seemed to be less annoyed than their friends upon the tree. The ants advanced fearlessly to the attack, and when they

could, would lay hold on the caterpillars and march off with them down the tree; though their progress was frequently much impeded by their struggling prey, who took every opportunity to hold themselves fast by the limbs; but to no purpose: the ants would tug them loose and then hold them in such a position as to prevent further annoyance. Arrived at the bottom of the tree, our warriors or robbers took the direct route to their encampment some nine or ten yards distant, where, I suppose, they initiated their captives into their subterranean mysteries. Now, Mr. Rusticus, I don't write this letter to give you any new information, (for I suppose all such things are *old* news to you,) but to request information of you. You will probably smile at my simplicity or ignorance, but that shall not deter me from learning of you whatever I can. One thing, that I should like to inquire of you, is: whether ants and caterpillars have eyes, and, if they have, whether they make use of them? For certainly from the observations that I made on the above occasion, I should infer that they either had none at all or else very bad ones, and didn't use them. As to the caterpillar, for instance, if it thought itself safe, it would not move till it was in the jaws of the ant, though it might have seen the little depredator approaching, if it had chosen to look about. And as to the ant, it would repeatedly pass its prey and not appear to know that it was so near, till at last it stumbled upon it. Another thing is: do ants eat caterpillars? or what do they do with them? There is no doubt, Mr. Rusticus, if you will consent to explain these things you will afford instruction to others besides,

Your obedient servant,

PHILORUSTICUS.

#### REPLY TO THE ABOVE.

I am always happy to communicate all the information I possess on any subject, and therefore, with pleasure, proceed to reply to my unknown correspondent. I have not "smiled at his simplicity and ignorance," but admire his patience of observation, and vigor of description. The ants were capturing the caterpillars and conveying them to the fornicary, not for the purpose of "eating them" entire, but of sucking the juices of their bodies. I presume that the *aphides* (Plant-lice) which are the regular milch cows of these little creatures, were not abundant in that vicinity, and they therefore took the best they could get. A few facts will show their habits in this respect. Sometimes ants will haul a dead cockroach, which is bigger than a hundred of them, to their nest. A multitude will take hold of him and lift him up—some go ahead to

show them the way. If they perceive that the body of the cockroach lies across the hole and will not thus pass through, an order is given, and the body is turned endwise, and thus it is dragged in and a dinner is made of cockroach broth. Kirby says, "he saw two or three ants hauling along a young snake not dead, which was as thick as a goosequill." St. Pierre relates that he saw a number of ants carrying off a Patagonian centipede. They had seized it by all its legs and bore it along as workmen do a large piece of timber.

"Have ants and caterpillars eyes, and if they have, do they use them?" I do not believe that caterpillars see. The experiments I have made convince me of that fact,—but ants see very distinctly. They are perfect insects; caterpillars are not, but have to undergo their transformation, before they are *imagines*, or perfect insects. Sight is not necessary for them, for the eggs from which they are hatched, are laid on the tree or shrub, where they find their appropriate food as soon as they are excluded from the egg. Nature is very economical. Sight is not necessary to the happiness of the animal, and therefore it is not bestowed on them. The reason why the ants passed by some of these caterpillars, until they "stumbled" upon another, was not that they did not see, but they were looking out for the *fattest* subjects. They instinctively knew which would afford the richest repast. The "lean kine" they rejected, but pounced on the "fat and well favored." Even a child will select the biggest and softest of a pile of apples. Are you satisfied?

RUSTICUS.

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#### MY FIRST VISIT TO THE OCEAN.

Events and scenes that, to the traveller and man of experience, may be trifling and unimportant, often constitute an era in the life-time of those who have before scarcely extended their journeyings beyond their college walls. I say this, that I may anticipate the smile of those to whom the scenes described below, are familiar.

I left college in the fall of 184-, with just such an idea, and about the same views of the great world of nature as a Sunday-scholar has of the world of heathenism—confused, indistinct, and purely imaginary—and when I found, after rambling some weeks in the Middle States, that I was but thirty miles from the sea-shore, no language can tell my anxiety. It was a long day's ride through the interminable pines and sands of Jersey—however, just after sun-set one beautiful evening—tired, jaded, and exhausted in every way, except of thinking and talking about the ocean, we drove up to the door of a boarding house, at

one of the bathing places upon the coast. As the house was some distance from the beach, and night had already set in, we were obliged to defer our pleasure until the morning; though the deep-toned melody that came roaring over the land, had increased our anxiety into an agony of excitement.

In the morning we rose with the lark, and hurried, or rather danced as rapidly as the dignity of a graduate would permit, down to the coast. A high and barren hill of pure white sand, washed up by the everlasting heavings of the sea, entirely intercepted our view, though we could distinctly hear its roaring music not fifty yards before us. When we reached the top of the bank, the whole scene burst upon our view at once—Old Ocean himself, in all his briny mightiness—gilded into the most gorgeous glory by the sun just rising; it was the greatest moment of my life. The first idea that crossed my mind, was, that if there was any reason in any idolatry, it was in that which paid its homage to a being so great, so grand, so seemingly a type of the Eternal and Infinite. To my right and left, a long white plain of sand, glistening like a sea of diamonds, extended as far as the eye could reach, whilst before me the great sea rolled—deep and blue—until it met the bowed horizon.

I spent the whole day upon the beach, and only they who have done so, can know the thrilling interest and pleasure. It is a noble pastime to trace a name in deep characters, or stamp a plain foot-print in the yielding sand, and watch the coming tide, first boldly rushing until it breaks, then creeping quickly up the beach, sweeping the fine sand before it, obliterating every trace of our labor, and smoothing every thing again as perfectly as before. It types most beautifully the evanescence of all man's works and glories, and the perishableness of all human things.

What glorious sport it is to wait the incoming wave, laden with shells and *sea-things*, beautiful and curious, as if to tempt and taunt, and then chase them as the receding wave carries them back again to the deep.

It is glorious and soul-thrilling to watch the far-out wave, as it sports its white crest in the sunlight, and comes rolling and thundering in its foaming magnificence, gathering strength and roar every second, as if it would demolish altogether the sandy rampart before it; but even whilst you watch, it breaks with a sullen roar and sends swift its waters to the beach, and (as a beautiful writer says,) "kisses it only with a silent murmur."

It is curious to see the unceasing out-going and in-coming of the waves—but still more to think about it. Day after day, year after year,

century after century, and age after age; every moment since “the spirit of God moved upon the waters,” that mighty ocean has never ceased its everlasting rollings to and fro—an awful fact. Let the vain sceptic go to the beach,—let him shut his eyes to all the glory, and magnificence, and infinity before him; let him even forget *its* faith and gratitude, as he sees its vapory incense ascending incessantly to the skies—but let him, discarding every thing else that is grand and awful around him, see and think only of the everlasting motion of the tides, in and out, and then say—“There is no God.” He must be a fool indeed!

*College of St. James', Md., March, 1845.*

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BOTS IN HORSES AND OTHER ANIMALS. NO. I.

GENUS OESTRUS. LIN.

Oxen, sheep and horses are subject to the annoyances of certain parasitic insects, vulgarly called *Bots*, which I design briefly to consider in these communications. The extraordinary means the perfect insects pursue in depositing their eggs, the situations the *larvae* or grubs inhabit, and the very high temperature to which they are exposed, render their history very interesting.

The *bots* of the ox (*Oestrus bovis*.) live under the skin of the animal, being situated between it and the cellular membrane, in a sack or abscess, which is rather larger than the insect, and by narrowing upwards opens externally to the air by a small aperture. This grub is entirely different from that which inhabits the stomach of the horse, and, of course, the fly produced by it is different. Even Linné thought they were the same, but the illustrious Swede himself sometimes erred.

This *larva* having arrived at its full growth, effects its escape from the abscess, by pressing against the external opening, and falls from the back of the ox to the ground, where, seeking a convenient retreat, it becomes a *chrysalis*, and in a few weeks the perfect fly is disclosed. Cattle are extremely terrified when attacked by this fly, and sometimes the agitation is communicated to the whole herd. The classical reader will find a lively description of such a scene in Virgil's *Georg.*, lib. III. ver. 146—151.

The heifers, steers, and younger cattle, are most frequently attacked by this fly, and have, in general, a greater number of bots than others: the strongest and healthiest beasts seem constantly to be preferred by it, and this is a criterion of goodness in much esteem among dealers in cattle.

The tanners also observe that their strongest and best hides have

the greatest number of bot-holes in them: for although the skin heals up on the exit of the *larva*, it is not with the same matter as the original skin. In the leather, when dry, those holes which were made in the skin the year preceding the death of the beast, cannot be distinguished from the others which were made at any former period, not being in any perceptible degree less filled up. In the dried hide, it does not appear a round hole as in the living skin, but only as a crack. This arises from the spongy substance which had filled the aperture, contracting in drying, and bursting, and also from the artificial mode of hammering and preparing the hide.

The female fly is very quick in performing the operation of depositing her egg: she does not appear to remain on the back of the animal more than a few seconds.

The grub is very conspicuous and may easily be detected in the backs of the cattle, and destroyed. The injection of any corrosive liquor into the sack would kill it: or by puncturing the *larvae* with a hot needle introduced through the aperture of the skin, or even by simple pressure they may be destroyed, afterwards extracting them or leaving them to slough away. A man employed for this purpose, might, in half a day, in this manner, destroy every bot in a large drove of cattle.

Notwithstanding the apparently unnecessary existence and cruel effects of the *Oestri*, they are probably not altogether without some use. I do not believe that any thing was made in vain. May not the remark be ventured, that their effect in keeping up a considerable degree of irritation in the membranes in which they are situated, acts like a perpetual issue or blister? There is abundant proof of the utility of local irritations in preventing the access, as well as in curing diseases. We often see a formidable disease removed by blistering the skin, and may not the bots perform this part in relation to animals? But, however useful a few of these natural *stimuli* may be, the increase of their numbers, producing bad consequences, should at all times be prevented.

The bots of sheep (*O. ovis*.) are not so large as those of oxen. They are mostly found in the horns and frontal sinuses of sheep, but it is probable that during the life of the sheep they inhabit the maxillary sinus, and crawl into the other situations on its death.

When full grown they fall through the nostrils, and change to the *pupa* state, lying in the earth, or adhering to a blade of grass.

The fly bursts the shell in about two months. The manner in which this species deposits its egg, is not so easily observed, owing to the obscure color and rapid motion of the fly and the extreme agitation

of the sheep; but the motions of the sheep afterwards, and the mode of defence it employs to avoid it, can leave but little doubt that the egg is deposited on the inner margin of the nostril.

The moment the fly touches this part of the sheep, they shake their heads, and strike the ground violently with the fore feet: at the same time holding their noses to the earth, they run away, looking about them, on every side, to see if the fly pursues; they also smell the grass as they go, lest one should be lying in wait for them. If they observe one they gallop back, or take some other direction. As they cannot, like oxen or horses, take refuge in the water, they have recourse to a rut, or dry dusty road, or gravel pit, where they crowd together during the day, with their noses held close to the ground, which renders it difficult for the fly conveniently to get at the nostril.

Sheep are particularly subject to disorders attended with vertigo, probably arising from an affection of the brain, and it is a common notion that this is occasioned by worms in the brain, when the real fact is, that these *worms*, instead of occasioning this disease, tend to divert its attacks, or, at least, to render them less fatal.

I shall defer some remarks on other species of *Oestrus*, especially that which inhabits the stomach of the horse, for your next No. of the Journal, and shall conclude this paper with descriptions of the two insects spoken of above:

*Oestrus Bovis*.—Wings fuscous, immaculate—abdomen with a black medial band; end of the abdomen covered with fulvous hairs.

Front white, tomentose. Thorax yellowish before—black in the middle—with four longitudinal naked lines—cinereous behind.

Feet black—tarsi pale.

Abdomen of the female with a black attenuated style—evolving by compressing.

*Larva* subcutaneous, apodal, fuscous—with eleven segments—lines transverse, scabrous, interrupted.

*O. Ovis*.—Wings pellucid—abdomen versicolor with black and white.

A few scattering hairs on the body—vertex of the head with excavated points. Thorax cinereous with black elevated points—setigerous—with four black lines—abdomen whitish-cinereous spotted with black.

*Larva* white—ovate—before, acuminate with two hooks—behind, truncate with a prominent margin and two black respiratory scales.—Above, convex with black lines and points. Below, plain, in the middle of the segments marked with minute rough black lines.

RUSTICUS.

## NOTE ON AGRILUS RUFICOLLIS.

BY PROF. S. S. HALDEMAN, OF COLUMBIA, PA.

In its larva state this little insect lives at the expense of the cultivated *Rubus* (raspberry,) in the heart of which the pupa may be found in the month of May, the perfect insect appearing in June. The larva bores between the wood and bark, injuring the plant and causing a wide unsightly excrescence. It next penetrates to the pith, which it traverses for several feet, finally excavating a cavity in which it undergoes its transformations.

It is probable that the larva feeds during summer and autumn, and passes the winter in the pupa state. The diseased stems are readily recognizable, and should be cut out and burnt in autumn or early in the spring. The perfect insect is sometimes found upon *Rubus villosus*, which renders it probable that this is the natural food of the larva.

## DISTANCES AND MAGNITUDES OF THE FIXED STARS.

BY DANIEL KIRKWOOD, OF LANCASTER, PA.

The great problem of determining the distances of the fixed stars, has engaged the attention of the most eminent astronomers for the last two centuries. Supposing them to be suns equal in magnitude to our own, some have endeavored to form an approximate estimate of their distance by photometrical experiments. For this purpose the celebrated Huygens employed a small tube, in one end of which was inserted a spherical lens, so minute that only the 27664th part of the diameter of the sun's disc could be seen through it. This afforded a light which appeared about equal to that of Sirius; whence he inferred that that star is 27664 times more distant than the sun. But Dr. Wollaston, by more accurate observations and experiments, found the light of the same star to be to that of the sun in the ratio of 1 to 20,000,000,000. Since, therefore, the light received from a luminous body is inversely as the square of the distance, it follows that the sun would have to be removed to 141421 times its actual distance, in order that its light should be no greater than that of Sirius.

Astronomers, aware that the only true method of finding the distance of a star, is by finding its annual parallax, have devoted much time and labor to this subject. Cassini affirmed that he observed in Arcturus a parallax of seven seconds, and in Capella, one of eight.—This would make the distance of the former 20250 times greater than that of the sun, or 19,237,500,000,000 miles. From observations of right ascension and declination, Piazzini made the parallax of Sirius four

seconds, and that of Procyon five and seven-tenths. In the same manner Calandrelli deduced a parallax of four seconds for Vega; but these results have all been shown to be incorrect, and it was not till within the last few years that the distance of any star was determined with any degree of certainty.

Dr. Long appears to have been the first who suggested the method of finding the parallax by micrometrical measurements of the angular distance of two stars in close proximity to each other, or nearly in the same line of vision; for it is evident that if either star has any sensible parallax whatever, their apparent distance from each other must vary with the earth's motion in its orbit. This suggestion led Sir William Herschel to commence his observations on double stars, in order, if possible, to discover their parallax. He was soon diverted, however, from his original object by the discovery of changes in their relative positions which could not be referred to the orbital motion of the earth. Hence he concluded that the apparent proximity of these stars was not in consequence of their being accidentally situated nearly in the same line of vision; but that they were really so near as to be within the sphere of each other's attraction, and that such a physical connection existed between them, as caused them mutually to revolve around each other, or rather, each around their common centre of gravity. His subsequent observations, together with those of other astronomers, have confirmed this hypothesis. This eminent astronomer continued his observations with characteristic perseverance, until by the aid of his powerful telescope he had discovered 500 binary systems, a list and description of which he presented to the Royal Society. By the researches of later observers, particularly those of Sir John Herschel, and Professor Struve, this list has been extended to several thousand.

In November, 1835, Struve commenced his observations on Vega, or *Alpha Lyrae*. He selected this star because another smaller one is situated at an angular distance of only forty-two seconds from it.—These are found not to be connected by any common motion; they must, therefore, be at different distances from the earth, and their angular distance must vary with the earth's annual motion. Having continued his observations for several years with the greatest accuracy and perseverance, he found the parallax of *Alpha Lyrae* to be 0."2613. Hence its distance must be 771400 times greater than that of the sun from the earth, or, 73,383,000,000,000 miles; a distance so great that light, which travels at the rate of 192,000 miles in a second, would not reach us from that star in less than 12 years. So that, were Vega now stricken out of existence, to us it would appear to occupy its place

in the heavens, and shine with its present brilliancy for twelve years to come.

While Struve was engaged with these observations on Vega, Professor Bessel, of Königsberg, was observing 61 Cygni for the same purpose. This is a star of the fifth magnitude, about seventy-eight degrees east from Vega. It was chosen, because, being a double star, it could be observed with the greater accuracy; and because of its great proper motion, which amounts to about five seconds a year. Its two component stars, moreover, have the great angular distance of sixteen seconds; both which circumstances indicate its comparative nearness to our system. The Professor continued his observations with unwearied industry from 1837 to 1840. Near 61 Cygni he selected two small stars which do not partake of its proper motion, one situated in the line of direction of its two component stars, the other perpendicular to this line. With his great Frauenhofer heliometer he measured the varying distances of these stars from the point which bisects the distance between the components of the double star. From a series of the most accurate and laborious observations, this celebrated astronomer determined the annual parallax of 61 Cygni, to be  $0''.348$ , or a little more than one-third of a second. Consequently its distance is 592,000 times the earth's mean distance from the sun, or 56,240,000,000 miles; a distance which would not be traveled by light in less than nine years and four months.

The distance of some of the fixed stars being now ascertained, we may confidently anticipate the determination of the distances of others, and perhaps eventually their magnitudes and densities. The only difficulty which presents itself in estimating the diameter of a star, the distance of which is known, arises from the fact that, generally, their discs, even when viewed by telescopes of the greatest magnifying power, do not subtend any appreciable angle, but appear merely as luminous points. Sir William Herschel states, however, that he found the apparent diameter of Vega to be  $0''.3553$ . If this be correct, its real diameter is about 136 times greater than that of the sun, and, consequently, its magnitude more than 2,500,000 times greater.

The distance of any two stars from the earth being known, their distance from each other may also be readily determined. The two components of 61 Cygni, for example, having an angular distance of sixteen seconds, their real distance from each other is found to be about 4,750,000,000 miles. If, therefore, their masses are equal, the circumference of the orbit which each describes, is 14,922,600,000 miles. Now the period of revolution of this star has been estimated by Her-

schel at 452 years; Bessel, however, from later, and perhaps more accurate observations, concludes that it cannot be less than 540 years.—Admitting the correctness of the latter estimate, the hourly motion of the component stars is 3154 miles; and since their distance from each other is about fifty times that of the earth from the sun, if we suppose the sum of their masses equal to the sun's mass, the time of their revolution, found by the third law of Kepler, would be about 353 years. But since *the mass is inversely as the square of the periodic time*, we have (admitting their period of revolution to be 540 years,)  $(540)^2 : (353)^2 :: 1 : \frac{2}{9} \frac{4}{1} \frac{6}{8} \frac{9}{10}$  = the sum of their masses, that of the sun being 1.

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BROOKS' ROSS' LATIN GRAMMAR. (Concluded.)

*A Latin Grammar*—by JAMES ROSS, L. L. D., edited by N. C. BROOKS, A. M., Professor in the Latin High School, Baltimore, Md. Philadelphia: Thomas, Cowperthwait, & Co.

We shall only add a few remarks upon the subject of Prosody. To this part of the original work of Ross we accord a high degree of merit, with the capital fault that it was entirely in Latin. Prof. Brooks has rectified this by giving an English version of the whole, nor do we at all object to his having kept the general rules in Latin. By the time the student begins the study of this part of the Grammar, he will have quite knowledge enough of the language to understand them, and they are capital *versus memoriales* of which he cannot acquire too many. We likewise admire Ross' plan of giving the examples and exceptions in Latin verse; it has not only the advantage of facilitating the retention of the words, which we have already mentioned, but that of making the student more familiar with the subject of quantity and versification. He has thus impressed upon his mind, not only the quantity of the particular letter or syllable under consideration, but likewise the quantity of the whole word.

But in this part also we should desire to see some improvements made. It is not as full in regard either to quantity or to metre as it ought to be. Thus, under his Rule I. excep. 3, the fact that both Plautus and Terence lengthen the *i* in the first syllable of *feri*, is unnoticed. And although it may be said that the peculiarities of authors are more properly discussed in treatises particularly adapted to their works, we think that the student, especially in this country where so few critical editions of the classics are published, should have notice of the leading facts of the case. A failure to attend to this, has made the whole subject of Latin versification beyond the simplest hexameters and the Ho-

atian metres, a perfect *terra incognita* to the great mass of our American students. In regard to words derived from the Greek, too, particularly proper names, it would save a world of trouble to refer the student at once to the Greek, where the long or short vowel will in so many cases tell him what is the true quantity of the syllable.

In the part upon Metres, Prof. Brooks appears to have added more to the original of Ross than any where else, and I am inclined to regard this as the most satisfactory part of the work. Here, however, we have always thought there was one grand desideratum in our English treatises upon versification—the *absence of the corresponding English verse*. I cannot but think that if the subject were properly illustrated, versification would be about as simple and interesting as any other part of Latin Grammar. That I may not appear singular in this opinion, I will cite the authority of the illustrious BENTLEY, who in his Treatise “*De Metris Terentianis*,” pp. 12–13, Leipsic Ed. Ter., thus expresses himself—“It is nothing more than just that we should give the same license to the ancient Latins which we grant to the modern English poets. Of these there is none whom we do not indulge in the occasional use of long syllables in places where the verse requires short ones. For as the Latins received all their forms of metre from the Greeks, so have we received ours from the Latins. On which account it is the more to be lamented, and is even deserving of our indignation, that ever since the revival of letters ingenious youth have been feruled and flogged into the learning of Dactylic verse which is inconsistent with the genius of their mother-tongue, but are, by the fault of their teachers, kept entirely ignorant of the Terentian metres which they themselves, though ignorant of the fact, are always singing at home and in the streets. The Trochaic Tetrameter catalectic is just as common among us as it is to Terence :

Égo ille agrestis, | sáevus, tristis, | párcus, truculen | tús, tenax.

Háppy is the | cóuntry life, blest | wíth content, good | heáłth and ease.

This Trochaic by the addition of one syllable will become a full Iambic :

Thrice háppy is | the cóuntry life | blest wíth content | good heáłth and ease.”

But although we agree with Bentley in deploring the little attention which is paid in our classical schools to Iambic and Trochaic verse, which, as being less mechanical in its structure, we think ought to have the preference over Hexameters in elementary instruction, as more attention would then be paid to principles, yet we cannot agree with him that “Dactylic verse” (I suppose he means Hexameter) “is altogether inconsistent with the genius of our language.” We have seen

some very smooth Hexameters in English. Sir Philip Sydney's *Arcadia* has some that even Montgomery (see his *Lectures on Eng. Lit.* p. 91,) acknowledges to be "not amiss;" thus,

"Lady, reserved by the heavens, to do pastors' companie honour,  
 Joyning your sweete voice to the rurall Muse of a desart,  
 Here you fully do finde this strange operation of love,  
 How to the woods Love runnes, as well as rides to the palace;  
 Neither he beares reverence to a prince, nor pity to a beggar,  
 But, like a point in the midst of a circle, is still of a nearnesse;  
 All to a lesson he draws, neither hills nor caves can avoid him."

We have seen some, and we have no doubt that Prof. Brooks could make others, much smoother than these. The experience of the Germans, whose language is as different from the Latin as ours, ought to satisfy us that we can successfully imitate all the classic metres. Klopstock's *Messias* is in Hexameters that are not a whit harsher than those of Horace in his *Satires*, nor does my ear tell me that his

"Sing unsterbliche Muse, der sündlichen Menschen Erlösung"—  
 is any less musical than Virgil's

"Arma virumque cano Trojæ qui primus ab oris"—

But not having the gift of "poesy divine," we refrain from pressing this subject any further than simply to commend it to the favorable consideration of Prof. Brooks. R.

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#### MILLER'S ENGLISH GRAMMAR.

The DANVILLE GRAMMAR: being an attempt to render the study of Grammar more effectual, more easy, and more satisfactory, than by the usual method.—  
 By GEORGE B. MILLER, D. D. pp. 70.

Every effort made to facilitate the prosecution of this important branch of study, should be encouraged. If any system can be produced superior to those now in use, let a preference be given to it. The want of success in teaching has arisen, not so much from the dryness of the subject as from the abstractness or imperfection of text-books. There are objections to every system now before the public. Various improvements might be suggested to render the study less irksome and more useful to pupils. The author of the volume, whose title-page has been given, is an experienced and successful teacher, the last twenty years of whose life have been devoted to the business: any thing coming from the pen of such a one, is, therefore, certainly entitled to our consideration. He tells us in the introduction, that the book is, in a great measure, the offspring of necessity. Many years since, in endeavoring

to instruct his classes by the aid of Murray's Grammar, he frequently found it impossible to explain the text. On examining further into the matter, he concluded that the text in many instances was inexplicable. This led him to attempt the substitution of something better. There are some things in the book to which we object. e. g. We see no necessity for the introduction of a new class of nouns, viz: *Monadic*, so called when there is but one of the kind, as *earth, sun*: or of a *neuter active* verb, which seems a contradiction. But our limits do not allow us to give a minute examination of the book, or to enter at large into the difference between this Grammar and others. We remark, however, that we are much pleased with the perspicuity of its arrangement, and the brevity and clearness of its definitions.

Many of our popular Grammars lie open to the charge of inaccuracy in the definitions and indistinctness of the whole system. Consequently, there is a corresponding inaccuracy and indistinctness produced in the minds of pupils, and a habit contracted of uttering words to which no definite idea is attached.

The practical part, only, of the author's system is at present published. The rationale of the plan will be presented to the public at some future period.

L.

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#### A SCENE ON THE CAMPUS.

LINNAEAN OPERATIONS.—Our correspondent "Rusticus," will, no doubt, rejoice to hear that his suggestions contained in the first No. of our Journal, are in a fair way of being realized to the very letter. Taking his hint, the Linnaean Association, last fall, organized itself into an ornamental gardening and arboricultural association, for the improvement of the College campus, and appointed committees for the management of the various divisions of the work. Thus one section was to manage the walks, another to superintend the planting of the trees, a third took charge of the shrubbery, a fourth of the flower-beds, and so on. The result has shown that this was not a mere whim of the moment. Measures were immediately taken to secure a large number of trees for the ensuing spring, and flower-seeds and shrubbery were collected from all parts of the country. The mild weather which we had towards the close of February and beginning of March, was seized upon as a favorable time for commencing operations in earnest. The contractors in Waynesboro' and Carlisle were forthwith called upon to fulfill their engagements, and promptly furnished between 150 and 200 thrifty young trees, chiefly the *Ailanthus*, *Linden*, and *Silver-maple*.—Whilst a suitable delegation was escorting these trees to their new

home, the other members of the Association were not idle. They turned out in full strength, and resolutely set about digging the holes in which the new-comers were to be set. This was no child's play. As so many former attempts to rear trees upon the campus had failed, it was determined to make sure work of it this time. Accordingly the holes were made about two feet and an half deep and of equal breadth. They were then filled up with virgin soil and rich mould, upon which the young trees, properly prepared, were set, and covered to the depth of about nine inches. The digging of each of these holes was no light job, but required at least half an hour's steady labor from four or five of the ardent laborers, who relieved each other so as to make the work as light as possible, and ensure the greatest expedition.

Simultaneous with this, various other operations were going on in the campus. A part of it which had been denuded of its soil at the time of building the College, and which had ever since presented a faint type of the "Great Sahara," scarcely a blade of grass growing upon it, was ploughed up and enriched, so as to give a fair promise of yielding a rich sward of grass. Our Professor of Mathematics was called in to act as a civil engineer, for the purpose of laying out all sorts of roads and walks, circles and curves and ellipses cutting each other in every direction, and making to the uninitiated a perfect labyrinth, of which, when completed, we hope to present our readers with a faithful diagram. At the same time, the chairman of the Floral committee, a practical gardener from Germany, was busy in his department. Flower-beds were thrown up along each side of the Via Benedicta, and in various other appropriate positions, shrubbery was planted, and the ground prepared for flowers. Thus, already, as if by magic, (industry and energy are a most potent magic,) we have several fine avenues of promising young trees, and the prospect of blooming flowers and abundant foliage, whenever summer opens upon us. Arbors also are to stand embosomed in vines and foliage.

In the midst of all these labors, it was discovered that the fencing was not sufficiently ornamental for the lawn which it was to enclose. It was, therefore, forthwith resolved to remove it, and substitute for it such as corresponded to the new order of things. The same hands which had so successfully wielded the mattock and the shovel, and held the plough, now seized the saw and hammer, and gave ocular demonstration that they had not forgotten, or were very apt in acquiring the art of the mechanic as well as that of the farmer. Several hundred feet of elegant and substantial fence now stand as a monument of the student's untiring energy.

But what became of their studies during all this time? Why four or five months' close confinement called for some relaxation, and our observation in this instance, satisfies us that the Linnæan Association is the best auxiliary that the College can have in converting the lassitude of its "long session" into cheerfulness and vigor. As we stood one bright morning upon the College portico, listening to the clear notes of the lark, and some early birds of spring, and saw some fifty or a hundred students scattered over the campus in regular detachments, vying with each other in their efforts, and pealing forth their merry shouts redolent of youth and happiness, we were forcibly impressed with the idea that this could not but have a fine moral effect upon these young men in their studies and in their general deportment. That they studied twice as much during the following weeks, when the change of weather put a stop to their manual labors, we have no doubt that their Professors will testify. But my reflections upon this subject are cut short by the thought that I cannot expect to find room for much more than this in the "Journal."

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#### HAIL! HAIL! TO THE COLLEGE:

A SONG written and dedicated to the Medical Department of Pennsylvania College, BY A LADY OF PHILADELPHIA. The music composed by R. BREITER. Philadelphia, *A. Fiol*, 196 Chesnut St.

Such is the title of a new piece of music just brought out by FIOT in the finest style of fashionable music. It is headed by a fine engraving of the Pennsylvania (Medical) College; a very handsome building which stands in Filbert above 11th st. Philadelphia, and is admirably fitted up with Lecture-rooms, Dissecting-rooms, a Reading-room, Museum, &c.; all the appliances of a first-rate Medical College. We give below the words of the song and are sorry that we cannot give the air, which we know will be highly popular, not only with our literary and medical students, but likewise with the ladies who have already commenced tuning their pianos to it. It was performed at the last commencement in Philadelphia, and we have no doubt that it will be the "song for the gathering of the clans," both there and in Gettysburg, for many years to come. In regard to the words, all we have to wish is, that the fair writer would add a couple of additional stanzas adapted to the other professions, (law and theology,) and to our intelligent farmers whose sons we expect to avail themselves largely of the advantages offered them in the literary department of this Institution, which not only bears the name, but is so closely identified with the highest interests of "the Keystone state."—But to the song:

Hail! hail! to the college, where learning's bright sway,  
Lures the spirit immortal from low haunts away;  
From wisdom's pure fount, springs with heavenward flight,  
Its guiding star Truth, and its Energy might.

Oh! wonderful power that flows down from above,  
To the band that goes forth on its errand of love,  
Like the Saviour who came wounded spirits to heal,  
Sweetest fountains of hope be it yours to unseal.

T' soft smile of the mother, will welcome your name,  
For the pulse of her dear one beats calmly again,  
And many hearts cherish a gratitude warm,  
For their flowers, sweet flowers, upheld thro' the storm.

Hail the Keystone State, and thy college for ever!  
Hearts true to thy precepts when close ties shall sever,  
And may years fleeting on, wreath a chaplet of fame,  
With the glory that circles an unsullied name.

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COLLEGE RECORD.

ANNIVERSARY OF THE PHILOMATHEAN SOCIETY.—This Literary Association celebrated its fourteenth anniversary on the 26th of February, in Christ's Church. Every thing passed off in a most satisfactory manner. A crowded house paid the most respectful attention to each speaker who appeared before them. And the speeches were undoubtedly deserving of this compliment, both on account of their contents, and of the manner in which they were delivered. Pennsylvania College has always been remarkable for its freedom from "mannerism" in the style of speaking adopted by its students, and we do not know that we ever saw this more strikingly displayed than in the simple and individual character which marked each of the performances upon this occasion. This is always, to our mind, *primâ facie* evidence of the originality of the productions, and of vigor of thought in writers. We hope the society will ever be equally well represented, and she will have reason to be proud of her representatives. The music (by the "*Händel and Haydn Association*,") enlivening the occasion, was of that chaste and appropriate character for which our Gettysburg bands are distinguished. The following was the order of exercises:

PRAYER by Professor C. A. HAY. ORATIONS—"The Gypsies"—*W. M. Baum*, Reading, Pa. "Knowledge, a source of Happiness"—*A. Essick*, Franklin co., Pa. "Scotland"—*H. R. Geiger*, Millersburg, Ohio. "The Triumph of the Church"—*J. W. Miller*, Carlisle, Pa. "The Exhumation and Re-interment of Napoleon"—*A. C. Wedekind*, York, Pa. Benediction—By REV. DR. KRAUTH.



# Pennsylvania College, Gettysburg, Pa.

## FACULTY AND INSTRUCTORS.

- Rev. C. P. KRAUTH, D. D.—*Pres't and Prof. of Ev. of Christ., Moral Science, &c.*  
Rev. H. L. BAUGHER, A. M.—*Prof. of Greek Language, Rhetoric, &c.*  
Rev. M. JACOBS, A. M.—*Prof. of Mathematics, Chemistry, &c.*  
Rev. W. M. REYNOLDS, A. M.—*Prof. of Latin, Mental Philosophy, &c.*  
M. L. STOEVER, A. M.—*Prof. of History and Principal of Preparatory Department.*  
Rev. CHAS. A. HAY, A. M.—*Prof. of German Language and Literature.*  
DAVID GILBERT, M. D.—*Lecturer on Anatomy and Physiology.*  
Rev. J. G. MORRIS, D. D.—*Lecturer on Zoology.*  
WM. ALBAUGH, A. M.—*Tutor and Teacher in Preparatory Department.*  
MR. H. R. GEIGER.—*Teacher of Writing.*

PENNSYLVANIA COLLEGE has now been chartered about fourteen years. During this time its progress has been such as to gratify the most sanguine expectations of its friends. The course of studies is as extensive and substantial as that of any Institution in the Country. The *Preparatory Department* provides for instruction in all the branches of a thorough English, business education, in addition to the elements of the Mathematics and Classical Literature. The *College Course* is arranged in the four classes usual in the Institutions of this country.

The government of the students is as energetic as their circumstances seem to require. They attend at least two recitations a day, Church and Bible Class on the Sabbath, and are visited in their rooms so frequently as to preclude the danger of any great irregularities. It is believed no Institution in the United States has more exemplary young men in connexion with it. They are all required to lodge in the College Edifice, special cases excepted.

The annual expenses are—for board, tuition and room-rent, during the winter session, \$61 87½; for the summer session, \$41 87½. Washing, \$10 00; and Wood, \$3 00. Total expense, \$116 75. Boarding can be obtained in town at \$1 25 per week.

There are two vacations in the year, commencing on the third Thursdays of April and September, and each of five weeks continuance.

The winter session closes on the 17th inst., and after the Vacation of five weeks, the summer session commences on the 22d of May.

## Acknowledgements of Donations to the Cabinet of the Linnaean Association of Pennsylvania College.

- March, 1845. One pair of Indian moccasins, from *Miss E. Steenberg.*  
2. One rare shell, from *Miss M. Middlecoff.*  
3. A number of specimens of stalactites, from the Mammoth cave of Kentucky, by *Mr. Ickes.*  
4. Some specimens of petrifications, from *Mrs. S. King.*  
5. Several specimens of Crustacea, from *J. G. Morris, D. D.*  
6. Do. do. Crustacea, and a work on entomology, from *J. J. Bowers, Baltimore.*  
7. Two boxes of insects (Coleoptera and Lepidoptera,) from *Mr. Kopp.*  
8. Indian antiquities, from *S. S. Schmucker, D. D.*  
9. Specimen of writing by the Electro-magnetic Telegraph, from *Rev. C. P. Krauth, Jr.*

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Address—"Editors of the Record and Journal, Gettysburg, Pa."

THE  
LITERARY RECORD AND JOURNAL

Of the Linnaean Association of Pennsylvania College.

MAY, 1845.



CONDUCTED  
By a Committee of the Association.

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1½ sheet, periodical—Postage, 100 miles 2½ cents, over 100 miles 3½ cents.

NEINSTEDT, PRINTER, GETTYSBURG.



THE LITERARY  
**RECORD AND JOURNAL**

OF THE LINNAEAN ASSOCIATION OF PENNSYLVANIA COLLEGE.

VOL. I.

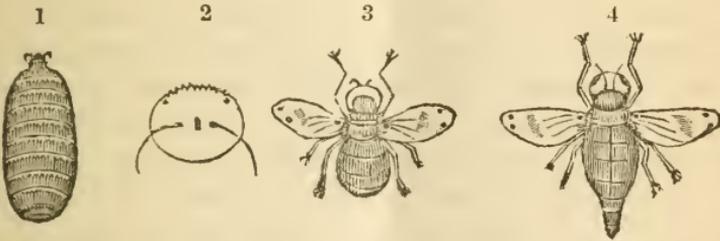
MAY, 1845.

No. 7.

OBSERVATIONS ON THE BOTS IN HORSES, NO. II.

OESTRUS EQUI..

In the last number of this Journal, I described two species of this genus, which infest the ox and the sheep, and shall devote this paper to that one which is *par eminence* designated as the *bots*, and is peculiar to the horse. It is very commonly found in the stomach of this animal—a remarkable location, indeed, for the habitation of an insect in its *larva* or grub state. It is represented in fig. 1. These *larvae* attach



themselves to every part of the stomach, and are sometimes, though less frequently, found in the intestines. Fine specimens attached to sections of a horse's stomach, preserved in spirits, are exhibited in the cabinet of the Linnaean Society of this Institution, presented by Dr. Jacob Hay, of York.

Their numbers in the stomach are very various, often not more than half a dozen, at other times more than a hundred. They hang most commonly in clusters, by means of two small hooks at the smaller end of the animal, of which an enlarged representation is given in fig. 2.

When they are removed from the stomach alive, they will attach themselves to any loose membrane, and even to the skin of the hand.

The body of the *larva* is composed of eleven segments, and it evidently receives its food at the small end by a longitudinal aperture, which is situated between the two hooks. Its food is probably the chyle, which being nearly pure aliment, may go wholly to the compo-

sition of its body without any excrementitious residue, though on dissection the intestine is found to contain a yellow or greenish matter, which is derived from the color of the food, and shews that the chyle, as the larva receives it, is not perfectly pure.

The slowness of their growth and the purity of their food must occasion what they receive in a given time to be proportionable small: from whence probably arises the extreme difficulty of destroying them by any medicine or poison thrown into the stomach. After opium had been administered to a horse laboring under a case of locked jaw for a week, in doses of one ounce every day, on the death of the animal, bots have been found in the stomach perfectly alive. Tobacco has been employed in much larger quantities in the same complaint, and has been also longer continued without destroying them. They are also but rarely affected by the drastic purgatives which bring away in abundance other animal parasites.

It is the opinion of experienced veterinary surgeons, that the bots are not so injurious to horses as is generally conceived. When removed from the stomach, a deep impression remains where they adhered; but whether they ever irritate it so as to bring on a fatal spasm of the stomach itself, or of the *pylorus*, or, by collecting round this passage, prevent the food from entering the intestine, has never been investigated with sufficient accuracy. The surprise of some farriers and farmers on opening the stomach after death, and being presented with so singular an appearance as the bots, has, without doubt, very often occasioned the death to be attributed to these, though it is certain that but few horses escape them. A few observations on the utility of such local irritations were made in No. 1., and I will here add, that it is remarked by persons of observation, that those horses which are not exposed to the bots, are more frequently infected with the glanders and other diseases, than those which are exposed to the attacks of the bots.

These grubs attain their full growth about the latter part of May, and come from the horse *per anum*, from this time until the close of June, or sometimes later. On dropping to the ground, they find out some convenient retreat, and change to the *chrysalis*: and in about six or seven weeks the fly appears. Fig. 3, male; fig. 4, female.

The mode pursued by the parent fly to obtain for its young a situation in the stomach of the horse, is truly singular, and is effected in the following manner:—When the female has been impregnated, and the eggs are sufficiently matured, she seeks among the horses a subject for her purpose, and approaching him on the wing, she holds her body nearly upright in the air, and her tail, which is lengthened for the pur-

pose, curved inwards and upwards: in this way she approaches the part where she designs to deposit the egg: and suspending herself for a few seconds before it, suddenly darts upon it and leaves the egg adhering to the hair; she hardly appears to settle, but merely touches the hair with the egg held out on the projected point of the abdomen. The egg is made to adhere by means of a glutinous liquor secreted with it. She then leaves the horse at a small distance, and prepares a second egg, and poising herself before the part, deposits it in the same way. The liquor dries and the egg becomes firmly glued to the hair; this is repeated by various flies, till 4 or 500 eggs are sometimes placed on the horse.

The inside of the knee is the part on which these flies are most fond of depositing their eggs, and next to this on the side and back part of the shoulder. It is a fact worthy of attention, that the fly does not place them promiscuously about the body, but constantly on those parts most liable to be licked with the tongue, and the *ova* therefore are always scrupulously placed within its reach.

Some persons suppose that the eggs are loosened from the hairs by the moisture of the horse's tongue, aided by its roughness, conveyed to the stomach and there hatched. Many eggs may thus be conveyed, but it is probable they pass on to the intestinal canal before they are hatched, and thus perish. The fact seems to be this—when they have remained on the hairs four or five days, they become ripe, after which time, the slightest application of warmth and moisture is sufficient to bring forth in an instant the latent grub. At this time, if the tongue of the horse touches the egg, its *operculum* is thrown open, and a small active worm is produced, which readily adheres to the moist surface of the tongue, and is thence conveyed with the food to the stomach.

It is fortunate for the animals infested with these insects, that their numbers are limited by the hazards to which they are exposed. I should presume that a hundred are lost for one that arrives at the perfect state of the fly. The eggs, in the first place, when ripe, often hatch of themselves, and the *larva* without a *nidus*, crawls about till it dies: others are washed off by the water, or are hatched by the sun and moisture, thus applied together.

When in the mouth of the horse, they have the dreadful ordeal of the teeth and mastication to pass through. On their arrival in the stomach, they may pass, mixed with the mass of food, into the intestines; and when full grown, on dropping to the ground in the natural way, a dirty road, or water may receive them. If in the fields, they are in danger of being crushed to death, or being picked up by birds. Such

are the contingencies by which Providence has wisely prevented the too great increase of their numbers.

The perfect fly but ill sustains the changes of the weather. It never pursues the horse into the water. The chillness of that element cannot be endured by them, and this is probably felt more exquisitely by them, from the high temperature to which they had been exposed during their *larva* state. The heat of the stomach of the horse is about 102 of Fahrenheit, and in their fly state they are only exposed to between 60 and 80.

For some of the above facts I am indebted to Mr. Clark's article in vol. 3, of *Linnaean Trans.*, London. Various other observations upon this genus of flies may hereafter be communicated.—But I conclude this article with a description of the perfect fly :

*O. Equi*.—*Front* white, tomentose, vertex fuscous; *eyes* black. *Thorax* fuscous, more obscure in the middle. *Abdomen* yellowish fuscous, with black spots and points in the incisures. *Wings* with a black minute point toward the base, a black medial band, and two black spots at the apex.

*Female* a little darker—apex of the abdomen, elongate, incurved, black, with a terminal bifid style.

RUSTICUS.

#### THE ORIGIN AND PROGRESS OF LANGUAGE. NO. I.

Although Dr. Elair is forced, with many others, (it may be reluctantly,) to admit the divine origin of language; yet, when he unfolds his views concerning the extent of the original language and its enlargement, he leaves us to conclude that there was a time when men knew no other part of speech than the interjection. His attempt to explain the philosophy of the formation of language involves him in the difficulty of virtually denying what he plainly asserts, viz: the divine original of language. For, that is no language which does not contain within it the parts of speech essentially necessary to communicate our ideas. Would we call that a spoken language, which consists only of strong inarticulate cries, accompanied by gestures of corresponding violence? If this had been the only language of our first parents in Paradise, we cannot suppose that, as rational creatures, they could have enjoyed very elevated pleasures; and we must settle down in the conviction that ignorance was bliss, and that sensuality constituted their happiness. Without canvassing, in detail, the views presented by our author on this subject, it is sufficient to say, that, on this most difficult

subject, much light has been thrown by the researches of the learned since his day.

The view which he presents, was substantially that of many distinguished men, and may yet prevail to some extent. Yet no one who examines attentively the lights upon this subject, which are now presented, can continue to entertain that view. This view is in substance as follows, viz: Language, (if it deserves the name,) originally, was extremely defective. In the progress of society men discovered its defects, and made the improvements which the nature of the case required. Thus, during the lapse of years, improvement was added to improvement, until language became one of the most powerful and subtil agents in the control of man; capable of rousing and allaying the storm of human passion, and of exhibiting thought the most abstract and refined. And now it is an instrument not merely of communicating ideas necessary for the ordinary intercourse of society, but of the highest refinement and luxury; so that, next to spiritual joys, are those which spring from language, the purest and most elevating.

I need not say that this view is erroneous, having no foundation in the *history of language*, in *reason*, or in *revelation*.

My design is to show, that language was originally *one and complete*, i. e. *It had all the parts of speech, gender, number, and inflection*; and, although it passed through changes, those changes did not necessarily benefit or improve it.

The study of comparative philology (by which is meant a comparison of the different languages of the earth, for the purpose of tracing their resemblances and noting their discrepancies,) is of recent origin. Infidels employed against the Mosaic account of the creation of a single pair as the progenitors of the human race, the argument derived from the multiplicity and apparent dissimilarity in the languages of the human race. This objection imparted a powerful impulse to investigation into the resemblances observable in language. The friends and the enemies of revelation were alike active in this investigation, and the result of it, like that of every other inquiry into the truth of revelation, has given, if possible, additional strength to the word of God. The early part of this investigation, because it was only partial and limited, threw a gloom over the minds of the lovers of the bible, and, as is too often the case, they resorted to vague and sometimes silly theories for the purpose of removing the obstacles which were in their way. If, for example, they found a few words alike in several languages, the inference was made at once, that they were derived from the same origin. Thus, Goropius Becanus, as quoted by Wiseman, accounts for the word

*sack* being found in so many languages, upon the ingenious ground, that no one at Babel would have forgotten his wallet, whatever else he might leave behind.

The great object aimed at, by the friends of revelation, was to show, that the various languages of the earth were similar in their essential features, and that these resemblances lead necessarily to the conclusion, that they have a common origin. The important question thus arises, what evidence is there of a common origin? It will be impossible to present all the evidence on this subject within the compass of one or of several essays. Neither indeed is it necessary. If I exhibit the mode of procedure, and some of the results, it will be sufficient. The reader will be able to examine authorities for himself, if he desires to pursue the subject farther. The affinities, which formerly had been but vaguely seen, between languages separated in their origin by history and geography, now began to appear definite and certain, by comparing languages with each other. Languages were found to be connected together in large groups, by new and important relations. It was found that the Teutonic dialects received important light from the language of Persia; that Latin, in many respects, resembled Russian, and that the theory of the Greek verbs in  $\mu\iota$  could not well be understood without recourse to their parallels in Sanskrit or Indian grammar. Thus it was clearly shown, that one speech pervaded a considerable portion of Europe and Asia, and, stretching across from Ceylon to Iceland in one broad sweep, united in a bond of union nations professing the most irreconcilable religions, possessing the most dissimilar institutions, and bearing but a slight resemblance to each other in physiognomy and color. This is what is called a family of languages, or one language, and has received the name Indo-Germanic or Indo-European. The principal members of this family are the Sanskrit, or sacred language of India, the Persian, the Teutonic, with its various dialects, Slavonian, Greek, Latin, and Celtic. Now these languages are traceable to what might be called the Japhetic stock, i. e. the descendants of Japheth after their separation from the descendants of Shem. They moved westward in the course of their migrations, and occupied the countries in Asia Minor and along the coasts of the Mediterranean sea, the whole of Europe, except the Biscayan and Finnish family. Many works have been written, and tables of words have been formed, to show the similarity between these languages: one exhibits 900 words common to the Sanskrit and other languages. Rev. Jos. Wolf informed us that amongst the Turkomans, by whom he had been made a prisoner, he discovered many hundred words similar to the German. The following words you

might readily suppose to belong to some European language, viz: *Pa-*der, *Mader*, *Sunu*, *Dokter*, *Brader*, *Mand*, *Vidhava*; yet every one of these is either Sanskrit or Persian. So the following words, *Denta* a tooth, *Brouua* the eye-brow, *Lib* lip, *Genu* knee, *Ped* foot, *Nasa* nose, *Stara* star, *Gela* cold, *Dhara* earth, *Nau* ship, *Ghau* cow, *Sarpan* serpent, &c.

But these languages are allied not merely by verbal coincidences, they exhibit a much more important conformity in their grammatical structure. Bopp, a distinguished writer in 1816, ascertained by an analysis of the Sanskrit verb compared with the conjugational system of the other members of this family, that there existed an intimate primitive affinity between them. The Greek verb, with its conjugations and complicated machinery of active, passive, and middle voices, augments and reduplications, is here found, and illustrated in a variety of ways. Our own language here has light thrown upon some of its anomalies. If we ask, where is the positive of the comparative *better*? We surely would not say, good, nor would we look for it in the Teutonic dialects, in which the same anomaly exists. But we find it in the Persian *Beh*, comparative *Behter*. So also the contrasted adjective *Bad*, comparative *Bahdter*, worse, &c.

Thus we perceive the mode in which affinities are traced, between the languages which have an Indo-European stock. Before investigation, they appear to be independent. As their distinctive features are more and more studied, resemblances appear, until, at length, the conclusion is irresistible, that they are derived from one common origin.

The same process is pursued in relation to the Semitic stock of languages; called Semitic, because the descendants of Sem or Shem use them, viz. Chaldee or Aramean, Syriac, Hebrew, Arabic, Ethiopic, Samaritan and Coptic.

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#### METEOROLOGY, NO. VII.

INDIAN SUMMER.

BY PROF. JACOBS, OF PENNSYLVANIA COLLEGE.

4. In endeavoring to account for the "Indian Summer," and other similar phenomena, it yet remains our duty to attempt to explain the reason of the comparative quiescence of the atmosphere, which has been stated to be an essential condition to the existence of a smoky sky.

Rest is the normal, and motion the disturbed state of the atmosphere. If it were entirely free from the influence of all external disturbing forces, it would revolve uniformly with the earth once in a side-

rial day, forming, in consequence of the centrifugal force, the exterior of a spheroid considerably protuberant at the equator. There would be a dead calm; for there would be no cause to excite currents or winds. To assert, (as some philosophers have done,) that the rotation of the earth on its axis alone would produce currents, is equivalent to asserting that motion could be produced without a cause. Were even the velocity of the earth suddenly altered, the atmosphere would soon partake of that alteration, and a mean motion would arise, which would be the same as if the impulse had been communicated to the whole mass.

But that rest of the atmosphere is constantly disturbed by the variable quantities of solar heat communicated, first to the surface of the earth, and then to the air in contact. The alteration in the density of the heated air, produces vertical currents, by which the mass becomes heated upwards to a certain distance in each latitude and climate, and horizontal currents, by which, by a constant interchange, the extremes of heat and cold are obviated.

There are changes of temperature, which, being local or confined to comparatively small territory, give rise to local winds, and which are violent in proportion to the rapidity of the alteration in temperature and density of the air. Thus, the rapid heating by day and cooling by night of the surfaces of islands, produce, in the former case, the sea-breezes, and in the latter the land-breezes.

There are other changes of temperature, which, being general, or extending over a large territory and more permanent than the former, give rise to general currents of considerable duration, or cause a determination of a large mass of the atmosphere, for some time, to be in one direction. Thus, the greater heat of the tropics causes the air of the higher latitudes to press towards the Equator, and, aided by the earth's rotation, to produce the trade-winds. Also, during our summer, there is an influx of air towards our continental land, from the two great eastern and western oceans, and during winter an efflux from the land towards the oceans. This is similar in kind to the sea and land-breezes in insular situations, only that the changes are more gradual and the currents more gentle, and that they are not daily, but annual.

Keeping these laws of disturbance in view, we may the more readily determine when the air is in its normal condition of rest, or at least of approximate rest.

*First*, in insular situations, a calm or rest in the atmosphere precedes the sea-breeze in the morning, and the land-breeze in the evening. In like manner ought we expect it to be in the great annual continental land and sea-breezes; a calm or comparative rest ought to precede the win-

ter, or land-breeze, and also the summer, or sea-breeze. This point we must state at somewhat greater length, in order to show its application to the explanation of the partial repose prevailing during the Indian Summer.

At about the autumnal equinox and a little afterwards, the retiring sun rapidly loses his influence and his power to keep up the temperature, which his rays had previously produced in the higher northern latitudes. That portion of the atmosphere belonging to those latitudes must, by the process of cooling, contract in bulk and increase in density, so that the whole mass will not now extend as high above the earth as it did before. The first consequence will be, that, at some elevation, the air will overflow from the tropics to fill up this depression in the North; and the second, that, by the increased pressure thus produced in the latter regions, the lower portions of the air, near the surface of the earth, will tend toward the place of the sun, forcing before them that which before occupied our latitude, and supplying its place with that which is colder. This is the cause of the cold and unpleasant winds of October. They are the first tribute, from the North, to the sun in his new southern home. After this first rush, by which much of the heated air of the northern temperate zone has been transported southward, an equilibrium gradually takes place. The surface of the land being yet warmer than that of the adjacent ocean, keeps up the temperature of the air over it at a point a little higher than that over the ocean, so that there would yet remain a tendency of pressure towards the continent, were it not counteracted by the constantly increasing pressure from the rapidly cooling regions of the northern land, and the modifying influence of the great circulating system, of which the *trades*, and our south-westerly currents are the counter-parts. Since, however, the surface of the land is now cooling more rapidly than that of the adjacent Atlantic ocean, an equality of temperature is gradually established, and the atmosphere consequently becomes nearly quiescent; for the diurnal variations of temperature and local causes must produce gentle currents, so that an absolute calm cannot exist. This state of quiescence, during which the oscillations of the barometer are small and slow, may continue two or three weeks, but sometimes it lasts only a few days. It occurs not earlier than the middle of October, nor later than the second week of November. It is the period of the Indian Summer, and the cause of the smoky state of the atmosphere at that time.

But in the space of from about ten to twenty days, the earth, which is the better radiator, reduces the temperature of its surface and that of

its superincumbent air, below that of the ocean, so that the pressure in the temperate now conspires with that in the frigid zone to produce currents towards the ocean. These currents will be nearly at right angles to our sea-coast, and hence our autumnal winds are mostly from the north-west. When these winds begin to blow, the previous season of repose is broken up, and the Indian Summer is over. It indicates the advance of winter from the frozen regions of the north.

We must, however, not forget to ascribe a most prominent influence, in the production of the Indian Summer, in the prevalence and direction of winds, and in the whole meteorology of the Atlantic states, to the Gulf Stream. This current, flowing from a comparatively warm climate, and bringing with it its warmed waters, is constantly giving out heat and affording vapor to the air immediately above it. The result being a comparatively inferior density and pressure, winds must be directed towards it from the land with greater or less regularity, until the temperature of the air over both again becomes the same, that is, until about the middle of April.

About this time, another season of comparative equilibrium between ocean and land, and another "Indian Summer," in all but the name, again occurs. The atmospheric changes necessary to produce this season of repose, are essentially the same as those just explained, only that they occur in a reverse order. The increasing altitude of the sun and length of day together produce a rapid increase in the temperature of the surface of the earth in northern latitudes. The air, which is thus warmed and dilated, is at first forced southward by the greater pressure from the North, producing the March winds. After these are over, the temperature of the land rapidly approaches an equality with that of the ocean, and an equilibrium takes place. This occurs from one to six weeks after the equinox; frequently being apparently divided into two stages; the first, during the last week in March, was the case in the spring of the last and present year; the second, about the middle of April, or a little later. About that time we may with almost as much regularity look for a season of fine, pleasant and smoky weather as during October.

*Secondly,* The similar seasons, mentioned as existing about mid-winter, and mid-summer, or a little later, are not to be regarded so much as seasons of equilibrium of pressure between land and water, as between the Northern and Southern hemispheres.

During the rapid cooling of the Northern hemisphere, through the months of November, December and January, when the daily loss of heat is greater than the gain, and the rapid heating of the opposite hem-

isphere, in which the gain is greater than the loss, the consequent contraction in bulk and diminution in height of its portion of the atmosphere, must be followed by a determination of the upper air towards the North, and of the lower towards the South, thus producing a slow circulation between the two hemispheres. Hence the greater prevalence of northerly winds during this than during any other portion of the year in our latitude. During May, June, and July, the same causes, in a reverse order, must produce a determination of the under portions of the atmosphere towards the North; and hence the greater prevalence of southerly winds during these months, than during any other part of the year.

Now, immediately after the minimum temperature has been attained in the northern, and the maximum in the southern hemisphere, the southward determination, or the great southern oscillation will be checked, and soon begin to move in an opposite direction, by the reversal of the thermal action; there being now a slight gain of temperature in the north and loss in the south. But, before this great oscillation can move in a contrary direction, there must be a temporary equilibrium. Accordingly, near the close of January, a season of calm, mild and pleasant weather, is almost invariably enjoyed; and the month of August is remarkable for its quiet and sultry weather. That the smoke of January and August is less dense than that of April and October, is probably due to the fact that the equilibrium of pressure between the two hemispheres, is kept in a very unstable condition by the want of an equilibrium at those times between land and ocean.

But the circulation preceding and succeeding these four seasons of comparative equilibrium, is not regular and continuous. It is frequently interrupted by periods of rest, producing the alternations of the weather which are found to exist. Thus, for example, the remarkably fine weather, almost invariably enjoyed about the 20th of February, may be but an interrupted stage of the great annual wave which has then commenced to flow towards the north.

But we are reminded that it is time, without further enumerations, to close our remarks upon the "Indian Summer," and other affiliated phenomena; hoping that the explanation which we have offered, if it do not commend itself to the approval of those who have given it their attention, will at least excite them to the effort of discovering and offering one which may prove satisfactory.

## ANT-IANA, NO. IV.

In the mornings, after a shower of rain, when I have visited the colony of ants described in the last No. of the Record, I have several times found them busily engaged in removing the earth from the openings into the nests, which presented every appearance of having been closed during the night. The openings they had made through the fresh earth, were only large enough for one or two to pass at a time, but the evening previous, some of the holes were an inch in diameter. Whether the ants had stopped the holes to prevent the rain from entering, or whether the rain had stopped them up by washing earth over them, I do not know; but the situation of the nest, on an elevated bank, surrounded by thick grass, would favor the former supposition.

It is indeed interesting to view the operations carried on at an ant-hill; how industriously and perseveringly the inhabitants remove and carry out the earth, and whatever obstacles they encounter in constructing the numerous subterranean avenues, necessary for their accommodation. Whilst some are engaged in mining, others are busy in collecting a supply of food for the numerous family. We see one coming home bearing a fly or a caterpillar; another more courageous will return laden with an unfortunate cricket or a spider, which are speedily conveyed into the nest, and in some instances, before life is extinct. I observed one dragging a large worm more than an inch in length, which seemed quite as much as it could manage, but after using considerable exertion, it succeeded in bringing it to one of the openings of the nest, where it left it, and went into the nest, apparently to examine whether all was ready within; but it soon returned and dragged the worm in.

I have sometimes amused myself by putting small sticks into their nests, in order to witness their skill and dexterity in removing them, and I was surprised to find that they possessed so much muscular strength. They would seize them at one end, and if they were not successful in moving them, they would go to the other, and change their position until they felt them move, and if one was not able to do it, several would combine their strength, and by their united efforts they would remove objects of such dimensions as I should suppose entirely beyond their ability.

About the end of June, I noticed a number of large black ants busily ascending and descending a white pine tree; on examining it, I discovered that many of the branches were thickly covered with a species of *aphis* or plant-louse, over which these ants were carefully travelling, frequently stopping to notice them, and at the same time touching them

lightly with their antennæ. The fact is that the ants were milking their cows. The aphides would eject a drop of limpid fluid from their tails, which was greedily devoured by their visitors. The latter appeared to know how to obtain a fresh supply, for they would gently tickle the sides of the aphides with their antennæ, and this would soon bring forth a drop of the much-coveted fluid, which was eagerly conveyed to their mouths, and then they moved quickly to another and treated it in the same way with the same result. The number of ants thus employed was so great, that the tree seemed to be alive with them and the aphides. Two currents of ants were constantly moving, one up and the other down the trunk of the tree, which are continued without any intermission during the night as well as the day.—This phenomenon may be witnessed almost every day in any garden on plants which harbor the aphides, and last summer I surprized and delighted a lady by exhibiting it to her in her own garden.

About the same time that I met with the ants on the pine tree, I observed that the same species, but from different colonies, were visiting two pear trees that grew near the pine. Presuming that their object was to partake of the fruit that grew thereon, I paid but little attention to them, but finding that they continued their visits after the fruit was removed, I examined and found at the base of the petiole of the leaf, a very small species of the aphides, on the exudation of which the ants were feeding.

The ants are very careful of these little animals, and they are even taken by the ants into their nests, and there fed and nurtured with the same assiduity that a dairy maid does her cows, and for the very same reason.

These aphides, of which there are numerous species, may be seen on nearly all trees and large plants. Every rose bush is full of them. Their history is most curious, which I shall send for the Journal, after I have given one more No. of Ant-iana.

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RUSTICUS.

#### THE SILVER MINES OF ANDREASBERG, IN THE HARZ.

BY PROF. CHAS. A. HAY, OF GETTYSBURG.

We had spent Walpurgis-nacht upon the Brocken. That was the night preceding the first of May, the time when the whole tribe of witches comes riding through the air from every direction, and assembles upon the Brocken, the highest peak of the cluster of mountains in north Germany, called the Harz. On the evening before, the sun had set in a bank of mist that obscured the landscape, and gave him a dis-

mal hue, bloody as the veriest witch could desire, that came with the careering throng to cleanse her gore-stained hands in the "Witches' Wash-basin" upon the summit. The mountaineers will have it that that same wash-basin, which is nothing else than a singular cavity in one of the flat rocks upon the mountain top, is always full of water.

From the "Devil's Pulpit," we had a fine view of the rising sun upon the morning of the first of May, 1843. It was a cold morning; the banks of snow that still hung upon the sides of the mountain, chilled the air, and there was no inducement to remain longer upon the summit, so we swung our knapsacks upon our backs, and commenced the descent. We had approached the Brocken from the north, by the romantic valley of the Ils, (Ilsenthal;) we descended towards the west, over a waste wild heath. Our path led frequently through peat bogs, in some places so soft that a single step to the side would have sunk one from two to three feet into the reddish grassy mire. Where the peat was more solid, its elasticity made it a pleasant substitute for the rough causeway that was our guide down the side of the mountain.

Not to detain you any longer upon the Brocken—before noon we reached the artificial lake of the Andreasberg mines. Steam would be too expensive where fuel is so scarce, and, as much power is needed for carrying on the works, they have been compelled to undertake an immense task, viz: the formation of an artificial lake away up in the mountain, where water enough can be collected during the winter and spring, to supply the mines with the necessary motive power during the summer. An immense dyke has been thrown across a narrow valley damming up the innumerable mountain torrents fed by the snows and frequent rains of this part of the Harz. The principal stream whose course has thus been interrupted, is the Oder, which gives its name to the basin thus formed, the Oderteich. The conduit, (called Rehberger Graben,) by which the contents of this body of water, larger than some Swiss lakes of note, are guided to the mines of Andreasberg, winds along the right side of the Oderthal, with so great an inclination that the stream rushes down with great rapidity. A carriage road lined upon the left with trees, accompanies it all the way, about six miles.

Andreasberg is half hid among the hills. A few fine houses, occupied by the government officers who superintend the works, form a striking contrast to the humble cottages of the miners. But there did not seem to be much poverty here.

We deposited our knapsacks in the guest-room of the principal inn, and despatched a servant for a "permit." This was easily obtained, and we now made our appearance at the entrance of the mines. We

were ushered into a large hall, hung round with the queerest array of clumsily constructed and mud-bespattered garments, that we had ever laid eyes upon. Our sad misgivings were too soon realized. "Gentlemen, the mines are wet, and you must sometimes crawl and creep.—Here are plenty of dresses, you can suit yourselves." We were in for it, and there was no use at being scared at a trifle. But what a figure we did cut in our new envelopements!

We descended by means of ladders an almost vertical shaft. About one hundred and fifty feet from the surface, if I remember rightly, we reached the first horizontal opening. This was a shaft of the usual size, about six feet high, by two and a half or three wide. We here stopped to rest and have the mode of operation in this mine explained to us by the guide. The veins of the precious metal strike through the successive strata nearly vertically. One can most easily form a correct conception of their position and appearance, by supposing a mountain to have been rent by deep narrow fissures, parallel with each other, and nearly at right angles with its base. These, afterwards filled by a deposit of lime, as a gang for various ores, form the *veins* which it is the miner's business to follow and rob of their mineral treasures.—These crevices are seldom more than a few inches in width, but they often extend more than a thousand feet downward and along the side or into the heart of the mountain.

A shaft is first sunk vertically, along the course of one of those veins. Upon reaching the end of it below, or such a depth as the miner chooses at first to go, a horizontal shaft is opened also along the course of the vein, thus removing it entirely, for the space of six feet, together with a foot and a half of the surrounding rock, on both sides, to allow the workman room. After this horizontal shaft has been carried forward as far as profitable or convenient, another is opened *immediately above it*, removing six feet more of the vein. The refuse is now thrown into the useless shaft below, whilst the metalliferous rock is carefully raised to the surface. In this way, by beginning at a great depth and working upward, the vein can be entirely exhausted, and yet no more of the rock removed to the surface of the ground than that which contains the ore.

Some of the shafts were almost filled up with heaps of ore over which we had to scramble, sometimes barely squeezing through between them and the roof of the shaft. Several of the lights were at different times extinguished by the water dripping from the rocks overhead. I was curious to know what became of all this water. Before the guide answered any question, he raised my curiosity still higher by

calling our attention to the apparatus for supplying the mines with fresh air. Some three hundred and fifty feet below ground, he showed us a large wooden box, into which a wooden tube, perhaps ten inches square, coming down through a vertical shaft, was closely set. This box, he told us, was half full of water, and the tube ran down into it, nearly to the bottom of the box. A stream of water, falling from a height into the funnel-shaped mouth of the tube above ground, carries down with it a considerable quantity of air, which, forced by the constantly descending column into the iron-bound box below, rapidly accumulates there. By its elasticity, the water is driven off through an opening in the side of the box, which is so high up, however, that the air is first powerfully compressed, and the whole is so arranged, that, whilst the air in the upper part prevents the water from rising above its place of egress, the air itself is forced out with an impetus sufficient to carry it to the most distant parts of the mine.

“Now, Mr. Guide, do tell us what becomes of all this water? It is easy enough for water to get *into* such a place as this, but how do you get it *out* again?” “We make tunnels for it and then let it find its own way out.” Some of these tunnels are immense undertakings. It is either at Andreasberg or at Clausthall that it was necessary to run a shaft *three miles* before they found an exit. This is owing to the depth of the mines, some of which extend three thousand feet and more, perpendicularly.

In our subterranean perigrinations we next stumbled upon the elevating apparatus. There are two separate works of this kind, one for the ore, the other for the workmen. The elevator is a simple endless rope, revolving upon wheels above ground, and at the foot of the large central vertical shaft. But the other is a more complicated apparatus which I fear I cannot satisfactorily describe. But still I will make the attempt. Two cables of iron wire are suspended side by side, eighteen or twenty inches from each other, in a shaft that inclines very little from the perpendicular. At intervals of twelve feet, small boards, from six to eight inches square, are securely fastened to these cables, at right angles to the line of their direction. Four feet above these, bars of wood about a foot in length, are lashed across the cables. Now, when the apparatus is at rest, these foot-boards and hand-holds are all precisely opposite to each other. But when the huge water-wheel above makes one-fourth of a revolution, the one cable is elevated and the other depressed twelve feet; so that any two of the foot-boards that were a moment before close together, are now twenty-four feet apart, the one has risen, the other descended twelve feet. The one which ascended has come into

close quarters with another, which, a moment before, was twenty-four feet above it. Now you can easily see how a person, by quickly stepping from one foot-board to the other, during the momentary pause between the rising and sinking of the cables, and by thus always finding himself on *the rising paddle*, must constantly ascend, and at the rate of twelve feet for every move of the cables. After watching the operation of the apparatus for some time, I handed my light to the guide and stepped upon one of the foot-boards. The one upon my right instantly descended, and I rose to a level with the second on the other cable; quickly stepping over upon this one, I saw the one I had just left sinking and I rose another twelve feet. As I mounted the third twelve, however, I came near being swept off the cable altogether. The shaft was crossed by another one, and at the point of intersection a platform had been thrown, through a trap-door in which the cables passed. The guide had told me nothing of this; I was standing out pretty far from the cable instead of clinging closely to it, and an inch or two farther would have brought my head in contact with the sleeper upon which the platform rested. This so terrified me that I kept clinging to the same hold, and of course descended at the next reversion of the motion. Taking the sinking side, in two more moves I found myself in the midst of the company, and felt wonderfully relieved as I stepped off and felt myself once more upon solid rock. And this was all done in less than one-fourth the time it has taken to describe it. The celerity of the motion is its great recommendation. It used to require two hours steady climbing for the workmen to ascend from or descend to the lower parts of the mine; now they can be elevated in half an hour, fifty or sixty at a time. The cables reached, when we were there, *two thousand three hundred feet*, and were to be extended still further down. I cannot now distinctly recollect the depth of the deepest shaft, but it is some hundreds more than this.

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THE YOUNG NATURALIST.

The study of Natural History is exceedingly attractive, and commends itself especially to the notice of the young. They require something that will discipline not only the mind but the body also. It will not do for them to be constantly shut up in the recitation or lecture-room, or within the narrow limits of their study. They require something to give tone and vigor to their limbs, and to lead them forth into the wonders of the world of nature. They must breathe the pure air of the country, climb its green hills, and measure its broad fields with a

firm and active step, if they would enjoy the blessings of robust health, sound sleep, and the full command of their waking energies. The prosecution of the study of Natural History by our College students, will almost inevitably secure these and various other important objects. Let them form a taste for Botany, for Mineralogy, for Zoology, or Entomology, or almost any branch of Natural Science, and it will take them forth into the open air—it will give them an object for taking exercise, and will react most favorably upon all their habits, both intellectual and moral. Such exercise is greatly superior to that of the ball-alley or gymnastics, (though we do not object to these if taken in moderation, which, however, is not a characteristic of youth,) and most effectually weans from the haunts of idleness, from trifling company, and from unprofitable pursuits.

Now, in the opening spring, is the time for our naturalists to prosecute their field labors with the greatest vigor. The birds are fast returning from their sojourn in the sunny south; the smaller quadrupeds that had lain dormant, or shut themselves up in their nests and burrows, now come forth; the opening earth sends up its many-hued flowers to the brighter light and the warmer suns of summer; and the myriad swarms of the insect tribes now begin to pour forth and to take possession of the place assigned them in the economy of nature.

It is to these last, especially, that we wish to direct the attention of our young friends. If in their excursions through the woods or fields they chance to espy a chrysalis, or cocoon, let them notice the place where it has been deposited, or the shrub or tree upon which it hangs, and bear it off to their cabinet, and put it in a place favorable to its development, for this is the way in which the finest specimens of insects may be obtained. Let them also put their nets in order and capture every butterfly, or other insect that they have not yet secured for their cabinet. It will also be well for them to secure duplicates of fine specimens that they may be able to exchange with naturalists either of this country or Europe. No time is now to be lost, and every fine day that he has at his command, should be improved by the enterprising naturalist. This season has opened remarkably early. During a ride which I took over the South-mountain in the beginning of March, I observed several species of butterflies already upon the wing; one of them was the *Vanessa Antiopa*, to which Harris says that Wilson alludes in his beautiful lines on the blue-bird:

“When first the lone butterfly flits on the wing;”

but it was not at this time “lone,” for I saw near the same place (on the side of the mountain,) several other *Papilios* of a species unknown to

me, which, however I could not obtain, as they were very active, and I had no apparatus for seizing them, along with me. I may also observe here, that the Vanessa which I saw had not that "ragged and faded" appearance, which Harris, in the passage above quoted attributes to it.

But now whilst I write (April 23d,) the fields are becoming alive with these wonderful and beautiful creatures, and soon every flower, and shrub, and tree, and almost every leaf and each blade of grass will have its visitors and destroyers. The *Clytus Pictus* makes its appearance here (in Gettysburg,) in the beginning of April. The splendid *Attacus Polyphemus* which has been sheltered in some warm place, will burst from its large, silky cocoon even in February, if it has been kept in the house, and now makes its appearance in the open air. On the 17th inst. I captured a most beautiful specimen of the queenly *Attacus Luna*, and on the 22d saw the superb *Papilio Ajax* and various other diurnal Lepidoptera sporting in the warm sunshine of the South-mountain, between Gettysburg and Hagerstown, Md. I mention these facts merely to show our young friends that it is now high time to bestir themselves if they intend to be very active in this department of Natural History during the present season.

R.

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 A TRADITION OF WYOMING.

BY THE AUTHOR OF "FOOT-PRINTS, OR FUGITIVE POEMS."

When paler suns began to gleam  
 On every shortening day,  
 And cool winds stirred the yellow leaves  
 That in the forest lay,  
 Young Albert went, his parent's pride,  
 With faithful hound and gun,  
 Out in the green-wood wide, to hunt,  
 From morn till set of sun.

His rifle woke the echoing hills  
 For many a league around,  
 And Albert's aged parents smiled  
 Right joyful at the sound;  
 For well they knew his practiced hand  
 And quick-discerning eye,  
 At each sure aim brought down a buck,  
 Or bird that soars on high.

The shots have ceased;—the sun-set sky  
 In gorgeous hues is drest,  
 And soon the lingering steps of day  
 Have faded from the west.

But, where is he, the hunter boy,  
 Who sallied forth at morn ?  
 Alas ! he comes not back to cheer  
 Those parents now forlorn.

Sad tales of Indian massacre  
 Flit through their troubled dreams ;  
 Each moaning whisper of the wind  
 A sigh of anguish seems.  
 The night-howl of the famished wolf,  
 Comes mournful on the ear,  
 And brings before their sleepless eyes  
 Ten thousand shapes of fear.

Now, frosty winter comes apace,  
 The summer birds are still,  
 And icy fetters wrap their links  
 About each wandering rill.  
 Again, the springing grass appears  
 Upon each sunny slope,  
 And flowers and blossoms wear again  
 The tender hues of hope.

But Albert's parents yet are sad,  
 Nor hope for future joy ;  
 For Spring that brings the merry birds  
 Can not give back their boy.  
 And now it chanced some forest lads  
 Who roamed the country o'er,  
 Espied poor Albert's mangled corpse  
 Beside a brooklet's shore.

A frightful gash from Indian steel  
 Defaced his forehead fair,  
 And many a drop of gentle blood  
 Had stained his silken hair.—  
 Hard by his parents' humble cot  
 He fell by cruel blow,  
 And icy Winter wrapped him in  
 His winding-sheet of snow.

Then, sorrowing friends who dwelt around,  
 An oath of vengeance swore ;  
 But, toward that harrowing scene of blood,  
 No Indian ventured more.  
 The wigwam and the bark canoe  
 Were seen no more again,  
 And on the hillocks of their dead  
 Now bends the white man's grain.

But yet tradition guards the spot  
 Where Albert's bones were laid :—  
 It is a lonely, quiet nook,  
 Of chequered sun and shade.  
 And thinking, in a plaintive mood,  
 Upon that fearful time,  
 My truant Fancy weaves the tale  
 In rude and homely rhyme.

## COLLEGE RECORD.

ANNUAL CONTEST OF THE LITERARY SOCIETIES.—Among the many appliances employed in Penn'a College to develop the minds of its students in all directions, the annual contest of the literary societies occupies an important place. So far as the writer has become acquainted with the facts in the case, there exists an honorable rivalry between the two societies, confined, however, to three particulars, viz : the desire to excel in the production and delivery of essays, orations, and debates. These are important, and are connected, more or less extensively, with all the departments of industry in real life. We suppose that the points of contest might be advantageously multiplied. Why not have contests in scholarship? Which society can produce the best mathematician—the most accurate linguist—the most profound natural philosopher? This hint is thrown out for the benefit of those whom it may concern. Personal rivalry is not pleasant, neither is it always safe. Too often, it terminates in personal hostility, and produces unholy ambition. But where the parties are unknown, until the contest actually occurs, and excellence for the sake of the literary association, or for knowledge alone, is the stimulant, the highest advantages may be anticipated.

The contest, which we took up our pen to record, was highly creditable to the societies. There was a large and attentive audience who manifested their interest in the exercises, by giving their fixed attention during three hours. The music was charming. The union of vocal with instrumental music is certainly the way to produce the highest enjoyment in melody. We were glad to hear that a new association has been formed, in the art of sweet sounds, which justifies the hope of great things. The following were the exercises of the occasion :

PRAYER—By Rev. JOHN ULRICH.

ESSAYS—“*The Conquest of Christianity*,” M. SCHAEFFER, Centre co. Pa. “*Language of Passion*,” J. M. CLEMENT, Mocksville, N. C.

ORATIONS—“*Field of Waterloo*,” a Poem, S. SCHEIMER, Warren co. N. J. “*Babylon Destroyed*,” J. A. HOUCK,\* Gettysburg, Pa.

\* Absent on account of indisposition.

DEBATE—"Is it inexpedient and unconstitutional for Congress to legislate on any religious subject?" Affirmative, WM. B. HINEARD, Adams Co. Pa. Negative, MATHIAS MILLER, Winchester, Va.

BENEDICTION—By Pres. C. P. KRAUTH, D. D.

APPOINTMENT OF NEW PROFESSORS.—At the recent meeting of the Trustees of Pennsylvania College, Mr. HERMAN HAUPT, A. M., was appointed Professor of Mathematics, and Mr. W. H. HARRISON, Assistant Professor of Languages in said Institution. Prof. Haupt graduated some years since with high honors at the U. S. Military Academy at West Point, was engaged for some time as a Civil Engineer in the service of the state of Pennsylvania, and has latterly conducted a select school for boys at his beautiful residence, called Oakridge, Gettysburg. Prof. Harrison is a graduate of Penn'a College, and has also had considerable experience as a teacher.

By these additions, the Faculty of Penn'a College is made one of the most numerous, and we hope it will prove itself one of the most efficient in the United States. Several of the Professors giving assistance in the Preparatory Department, that important part of the Institution is also placed in a most advantageous position, so that it holds out every inducement to parents to commit their sons to its care. By reference to the advertisement on our cover, it will be seen that the cost of education here is exceedingly moderate. The following is the list of the Faculty and Instructors under the new arrangement:

Rev. C. P. KRAUTH, D. D.—*Pres't and Prof. of Ev. of Christ., Moral Philos'y, &c.*

Rev. H. L. BAUGHER, A. M.—*Prof. of Greek Language, Rhetoric, &c.*

Rev. M. JACOBS, A. M.—*Prof. of Natural Science.*

Rev. W. M. REYNOLDS, A. M.—*Prof. of Latin, Mental Philosophy, &c.*

M. L. STOEVER, A. M.—*Prof. of History and Principal of Preparatory Department.*

Rev. CHAS. A. HAY, A. M.—*Prof. of German Language and Literature.*

HERMAN HAUPT, A. M.—*Professor of Mathematics.*

W. H. HARRISON.—*Assistant Prof. of Languages.*

DAVID GILBERT, M. D.—*Lecturer on Anatomy and Physiology.*

Rev. J. G. MORRIS, D. D.—*Lecturer on Zoology.*

WM. ALBAUGH, A. M.—*Tutor and Teacher in Preparatory Department.*

MR. H. R. GEIGER.—*Teacher of Writing.*

FAMILY EDUCATION.—The patrons of Prof. Haupt's Select School at Oakridge, and other parents who desire it, can still have their sons under his care, whilst they are attending any of the departments of College, which is about half a mile distant from his house. He is prepared to accommodate about a dozen pupils, and will give them the same attention as formerly. We may also mention, in this connexion, that Prof.

BAUGHER, whose house is about a quarter of a mile distant from the College edifice, still continues to take about an equal number of pupils into his family. By this arrangement, all the benefits of a select school and of attendance at College are most admirably combined at Pennsylvania College, and we desire to direct the attention of parents and of the public generally, to this peculiarity of the Institution.

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PENNSYLVANIA MEDICAL COLLEGE.

At a public commencement of the Medical Department of Pennsylvania College, held in the hall of the Chinese Museum, Philadelphia, March 4th, 1845, the Degree of Doctor of Medicine was conferred upon the following gentlemen, pupils of the institution, they having deposited Theses on the subjects set opposite to their respective names, and undergone a satisfactory examination.

Benjamin F. Alter,	Indiana,	Evening Exacerb. Fever.
William T. Babb,	Pennsylvania,	Utero-Gestation.
William A. Barry,	Pennsylvania,	Syphilis.
Daniel Beidler,	Pennsylvania,	Leucorrhœa.
James Dowling,	Pennsylvania,	Intermittent Fever.
Edward Gillespie,	Pennsylvania,	Bromine.
John L. Heist,	Pennsylvania,	Cynanche Trachealis.
John B. Kendall,	Georgia,	Empiricism.
C. Henry Leistner,	Tennessee,	Retroversio Uteri.
C. Orrick Richards,	Pennsylvania,	Amenorrhœa.
James Ruddick,	New Brunswick,	Variola.
Edward F. Smithers,	Delaware,	Gout.
Wm. S. Thompson,	Pennsylvania,	Puerperal Peritonitis.
Isaac W. Vanorsdel,	Pennsylvania,	Epilepsy.

At the same time the Honorary degree of M. D. was conferred on the following gentlemen: Achille Lalung de Ferol, St. Jago de Cuba. William R. Stewart, Adams Co., Pennsylvania.

The following extracts from the "Report of the Medical Faculty of Pennsylvania College," will show the steady progress and the flourishing condition of this important Institution:

"The Faculty of the Medical department take pleasure in reporting to the Trustees of the Institution, that the course of lectures of the past session has been attended with a degree of success equal to their most sanguine expectations. Drs. Gilbert and Atlee, who had accepted the

chairs of Surgery and Chemistry, conditionally, have, after delivering each a course of lectures on their respective branches, consented finally to accept their appointments; so that the Medical Faculty is now full. The number of matriculants was 60, considerably more than double that of the previous session. Pupils were received *ad eundem* from the University of Pennsylvania, Jefferson Medical College, Ohio Medical College at Cincinnati, and the University of Georgia. The residence of the pupils was as follows: Pennsylvania 44, N. York 2, N. Jersey 2, Delaware 2, Maryland 1, N. Carolina 1, Georgia 1, Ohio 1, Indiana 1, Illinois 1, Tennessee 1, Missouri 1, British Possessions 2.

This number might have been increased, had the Faculty thought proper to loosen the restraints imposed by law, and throw open their doors to all who might apply. This they did not feel at liberty to do. The requisitions provided by the charter have been rigorously insisted on, and matriculation was refused to several.

The number of applications, both direct and indirect, for the Honorary degree, was considerable. The Faculty has, however, decided to give this degree to no one but a man who has proved by years of successful practice that he has qualifications equal to those we would naturally expect from an attendance upon the full courses, and who is otherwise of unexceptionable character. We fear danger to the profession from the too great cheapening of the Honorary degree, and have therefore obliged several practitioners of some years' standing, to attend a second course, write a thesis, undergo an examination, and comply with all the other requisites for graduation."

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FAIR FOR THE BENEFIT OF THE LINNAEAN ASSOCIATION.

The ladies of Gettysburg have resolved to hold a FAIR for the benefit of the Linnaean Association. In this good work, they have the promise of the zealous co-operation of numerous *fair* friends in York, Baltimore, Philadelphia, Hagerstown, Chambersburg, and various other places between which and this place the communication is convenient. The ladies of Reading, Pa., have been foremost in this good work, having already forwarded a box containing a fine assortment of useful and fancy articles. We hope that all who are interested in this matter, will avail themselves of the opportunity afforded by the return of students to College, at the commencement of next session (May 22d,) to forward whatever they have prepared. It is expected that the Fair will be held sometime in June, of which due notice will be given. Meantime, any articles that are likely to sell, will be received with gratitude.

# APPEAL

TO THE FRIENDS OF LITERATURE AND SCIENCE,  
IN BEHALF OF THE LINNAEAN ASSOCIATION.

The establishment of a Linnæan Association in Pennsylvania College, was an event that will occupy a prominent place in the annals of the Institution. It was a happy circumstance that the spirit of enterprise, that had for some time been rife among the members of the College, embodied itself in a form so well adapted to direct their energies into the proper channels. The employment of the leisure time of the student in the prosecution of some branch of Natural Science, as a relaxation from the severer labors of the course, is a desirable end that can in no way be so effectually reached as by a voluntary association of this kind, and its beneficial influence upon us is already perceptible.

No sooner, however, had the association commenced its operations, and investigations been entered into in the various departments of science, than the want of an adequate *Library* and *Museum* was strongly felt. Measures were at once adopted for the acquisition of both, and carried out with such energy and success, that the Cabinet is already highly respectable. Numbers of distant friends of the College have generously availed themselves of this opportunity to contribute towards the prosperity of the Institution.

We therefore feel emboldened to urge this subject upon the attention of those who have not yet done any thing for us. We desire, and are determined to use every exertion to get together a cabinet, that will do honor not only to Pennsylvania College, but to the scientific spirit of the whole body of those interested in her prosperity. In this, not only the scientific, but all persons of taste and intelligence, can aid us most effectually. We desire to obtain specimens of the natural productions and curiosities, the fossils and minerals, the plants and flowers, the birds and shells, fishes and reptiles, the insects and the animals of this country, and of all parts of the world. We therefore appeal to our friends, every where, to encourage us in this undertaking, by sending us any of these things which they think will be of interest in such a collection. Donors may be assured that their contributions will be gratefully received, and that a record will be kept of the names of those who aid us in this enterprise. We have determined to erect a Hall in which to arrange and display to advantage the articles which we already possess, and which we are assured that the liberality of our friends and the public generally will hereafter furnish; but we hope that, in the mean time, so much will be done as to show that our labor and zeal for this work have not been superfluous.

Donations may be forwarded to the following gentlemen, who take a lively interest in the enterprise:

Rev. JNO. G. MORRIS, D. D., *Baltimore, Md.*

Rev. W. A. PASSAVANT, *Pittsburg, Pa.*

Rev. CHAS. MARTIN, *New York, N. Y.*

Rev. THEOPH. STORKE, *Philadelphia, Pa.*

Or to the "Curators of the Linnaean Association, *Gettysburg, Pa.*"

# Pennsylvania College, Gettysburg, Pa.

## FACULTY AND INSTRUCTORS.

- Rev. C. P. KRAUTH, D. D.—*Pres't and Prof. of Ev. of Christ., Moral Philos'y, &c.*  
Rev. H. L. BAUGHER, A. M.—*Prof. of Greek Language, Rhetoric, &c.*  
Rev. M. JACOBS, A. M.—*Prof. of Natural Science.*  
Rev. W. M. REYNOLDS, A. M.—*Prof. of Latin, Mental Philosophy, &c.*  
M. L. STOEVER, A. M.—*Prof. of History and Principal of Preparatory Department.*  
Rev. CHAS. A. HAY, A. M.—*Prof. of German Language and Literature.*  
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W. H. HARRISON.—*Assistant Prof. of Languages.*  
DAVID GILBERT, M. D.—*Lecturer on Anatomy and Physiology.*  
Rev. J. G. MORRIS, D. D.—*Lecturer on Zoology.*  
WM. ALBAUGH, A. M.—*Tutor and Teacher in Preparatory Department.*  
MR. H. R. GEIGER.—*Teacher of Writing.*

PENNSYLVANIA COLLEGE has now been chartered about fourteen years. During this time its progress has been such as to gratify the most sanguine expectations of its friends. The course of studies is as extensive and substantial as that of any Institution in the Country. The *Preparatory Department* provides for instruction in all the branches of a thorough English, business education, in addition to the elements of the Mathematics and Classical Literature. The *College Course* is arranged in the four classes usual in the Institutions of this country.

The government of the students is as energetic as their circumstances seem to require. They attend at least two recitations a day, Church and Bible Class on the Sabbath, and are visited in their rooms so frequently as to preclude the danger of any great irregularities. It is believed no Institution in the United States has more exemplary young men in connexion with it. They are all required to lodge in the College Edifice, special cases excepted.

The annual expenses are—for board, tuition and room-rent, during the winter session, \$61 87½; for the summer session, \$41 87½. Washing, \$10 00; and Wood, \$3 00. Total expense, \$116 75. Boarding can be obtained in town at \$1 25 per week.

There are two vacations in the year, commencing on the third Thursdays of April and September, each of five weeks continuance.

The winter session closed on the 17th of April, and after the Vacation of five weeks, the summer session commences on the 22d of May.

## Acknowledgements of Donations to the Cabinet of the Linnæan Association of Pennsylvania College.

April, 1845. From Mr. S. Ashmead, Philadelphia, one box of minerals, ten casts of ancient coins, Proceedings of Academy of Science, Philadelphia.

2. Dr. W. M. Kemp, Baltimore, a fine specimen of the *Exocetus* (flying-fish.)
3. Mr. F. Ealy, two sheets of vegetable impressions.
4. J. Weaver, Geological exploration of the State of Pennsylvania.
5. Prof. Jacobs, a number of shells.
6. D. G. Barnitz, Esq. York, a fine stuffed specimen of *Falco leucocephalus* (Bald-Eagle.)
7. J. G. Morris, D. D. specimen of *Mugil* (mullet.)
8. Dr. Van Patten, Washington, D. C. a splendid specimen of *Tetrao umbellus* (pheasant.)
9. Dr. Hiester, Reading, Pa. Notes of Travel, by himself.
10. From Mr. Boghos Krikori, of Constantinople, Turkey, an Armenian newspaper.

VOLUME I.]

[NUMBER 8.

THE  
**LITERARY RECORD AND JOURNAL**

Of the Linnaean Association of Pennsylvania College.

JUNE, 1845.



CONDUCTED  
By a Committee of the Association.

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1½ sheet, periodical—Postage, 100 miles 2½ cents, over 100 miles 3½ cents.

NEINSTEDT, PRINTER, GETTYSBURG.



THE LITERARY  
**RECORD AND JOURNAL**

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ENTOZOICAL FUNGI IN INSECTS.

BY JOHN G. MORRIS, D. D. BALTIMORE, MD.

It is well known to all observers of the natural history of insects, that they are subject to the attacks of numerous *animal* parasites, which destroy immense multitudes of them, and which, I believe, are designed by a wise Providence to keep them from increasing to too dangerous an extent. If it were not for these parasites and birds, which devour them in countless numbers, we would almost every year be afflicted with an insect-plague. These animal parasites are of various characters and habits. Some of them live in the interior of larvae or caterpillars, and subsist on their fat, where most of them undergo their transformation, but at the cost of the larva's life. Some are found adhering to the external body of the perfect insect, to which they occasion extreme annoyance, and, to some of them, death. But *vegetable* parasites on insects are not so familiar, and on this subject I desire to say a few words.

Some species of insects, both in the *larva* and *imago*, or perfect state, are subject to a parasitic fungus which grows out of various parts of their bodies.—Those who have been engaged in rearing silk-worms have probably observed on some of the diseased worms a mould or mildew, which, when examined through a microscope, is found to be a vegetable growth of the cryptogamous class and fungus order of the Linnæan system. It constitutes the disease called *muscardine* by the French. In the warm climate of South America, a fungus of several inches in length is found growing upon dead insects of the wasp and cricket families. One of these, which occurs on the island of Guadeloupe, is called by the inhabitants *la guêpe vegetal*, or vegetable wasp. A *Sphinx* (a large crepuscular butterfly,) was once found by the celebrated botanist De Schweinitz, of Bethlehem, Pa. with a fungus of the genus *Isaria* Pers., proceeding in all directions from the abdomen, nerves of the wings, &c. The *Sphinx* was dead when discovered, and it is not known whether

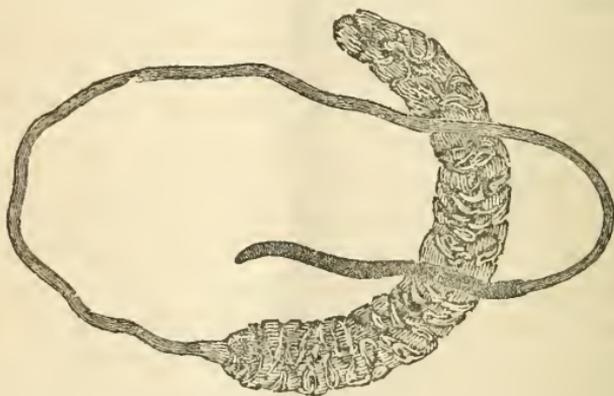
the fungus was evolved while it was yet living, or began to grow only after its death. Perhaps not, but it is probable the plant began to grow while the animal was in existence, but the vegetable life predominated over the animal life and destroyed it.

Kirby, vol. iv, p. 208, mentions the *pupa* of a species of *Tettigonia* (closely allied to the *grasshopper*,) in his cabinet, which has a fungus "with a twisted thickish stipes and oblong head, springing up in the space between the eyes." He observed something similar, but longer, in the grub of some large beetle in a collection in Paris, and he noticed something of the kind on the rostrum of a *calandra*, (Genus of beetles.)

In vol. 8 of Silliman's Journal, there is a communication on this subject with a well executed plate, representing a fungus growing out of the head of the larva of *melolontha*, (May-bug.) This grub is about one inch and a half in length, and is common in meadows, and destroys the grass, corn, and other fruits. It is often found under stones in moist places. It is not unusual to find a number of them which have vegetable "sprouts," sometimes three inches long, proceeding generally from between the head and under part of the thorax, and in a few instances from the mouth. Commonly there is one to each grub, though sometimes there are two. In every instance, the grub is not only dead, but in a state of decay, and the "sprout" rising above the ground indicating where they may be found.

A friend informs me, that he has seen a similar *sprout* growing out of the body of our mole cricket, (*Gryllotalpa*.)

The accompanying cut represents a larva of a *lepidopterous*, (butterfly) insect,



which is now in my cabinet, having a fungus about *six* inches in length growing out of its head. It is here represented in its natural size. It comes from New Zealand, where it is not uncommon and feeds on the sweet potatoe (*Convolvulus batatus*.) The fungus is *Sphaeria Robertsi*,

thus called by Hooker, I believe, in honor of Mr. Roberts, who brought it to England from that country. There are several other specimens in the Collection of the National Institute at Washington, to which they were presented by a gentleman who procured them in New Zealand. There is a fine figure of it, and a description of the plant in vol. 2 of Hooker's *Icones Plantarum*, which I will here introduce for the benefit of the botanical reader.

"*Sphaeria Robertsi*; nigra, suberosa, stipete elongato, flexuoso, simplice, (vel ramoso) capitulo elongato, acuminato, verniculiformi. Habitat New Zealand."

It appears that there are two genera of fungi growing in this remarkable situation, *Isaria* and *Sphaeria*. Several of their species are invariably found on dead insects in different stages of their existence, as *larva*, *pupa* and *imago*. They are found no where else, and this single extraordinary fact would furnish abundant material for a volume of speculation on the original creation of plants and animals.

The phenomenon seems to be rather common, for it has been observed by many persons, and may be witnessed every spring in our meadows.

An interesting question is, do these animals live after the fungi have grown out of their bodies, or does the vegetable life as soon as it is developed exhaust the animal life of the insect? I think not. Dr. Madiana, of Guadeloupe, says "he has noticed the *guêpe vegetal* living with its incumbrance attached to it, though apparently in the last stage of its existence and seeming about to perish from the influence of its destructive parasite." A German traveller in the West Indies, mentions, having seen what was probably the same species living, but instead of describing the animal, he wrote some pretty verses about it. His poetry could have been better spared than a faithful description of the insect bearing in its body a thriving plant. I should judge from analogy that these animals can live with this vegetable excrescence protruding from them. We know that caterpillars live, flourish, and even assume the chrysalis form, with *numerous* larvae of ichneumons feeding on them internally, and surely their depredations must be more exhausting than a mere vegetable growth. But I have no doubt that all the larvae thus encumbered eventually die in consequence of it, and that the lives of perfect insects on which they are found, are shortened by it.

The great wonder of all is, how the seeds of these fungi are deposited *always* on these insects—how they take root, and why these *species* are *never* found in any other situation! But nature is full of inexplicable mysteries, and where we cannot always explain, it is good to adore.

## THE ORIGIN AND PROGRESS OF LANGUAGE, NO. II.

After an examination of these two great families, (the Indo-European and the Semitic,) which may be said to include the languages of three continents, there are discovered sufficient analogies to justify the conclusion, that they have a common origin. I will take the liberty here of quoting, from Dr. Wiseman's lectures on the connexion between science and religion, the conclusion to which we are justified in arriving from the information accessible on this subject. I give the conclusions, referring the reader to the work itself for the details.

"And here let us look back for a moment at the connexion between our study and the sacred records. From the simple historical outline, which I have laid before you, it appears that its first rise seemed fitter to inspire alarm, than confidence; insomuch as it broke asunder the great bond anciently supposed to hold them together; then, for a time, it went on still further, severing and dismembering; consequently, to all appearance, even widening the breach between itself and sacred history. In its further progress, it began to discover new affinities, where least expected, till by degrees, many languages began to be grouped and classified in large families acknowledged to have a common origin. Then, new discoveries gradually diminished the number of dependent languages, and extended, in consequence, the dominion of the larger masses. At length, when this field seemed almost exhausted, a new class of researches has succeeded, so far as it has been tried, in proving the extraordinary affinities between these families—affinities existing in the very character and essence of each language, so that none of them could have ever existed without those elements, wherein these resemblances consist.

Now, as this excludes all idea of one having borrowed them from the other, as they could not have arisen in each by independent processes, and as the radical difference among the languages forbids their being considered dialects or off-shoots from one another, we are driven to the conclusion that, on the one hand, these languages must have been originally united in one, whence they drew these common elements essential to them all; and, on the other hand, that the separation between them, which destroyed other no less important elements of resemblance, could not have been caused by any gradual departure or individual development—for these we have long since excluded—but by some violent, unusual and active force, sufficient alone to reconcile these conflicting appearances, and to account, at once, for the resemblances and the differences." This force must be the Scriptural account of the confusion of the tongues at Babel. In like manner, the numerous languages

of the continent of America, as far as investigations have been made, are found to belong to one family. So also, in an equally satisfactory manner, is explained the state of the languages of the Indian Archipelago. Much, however, remains yet to be accomplished. The unity of the human race, and, by consequence, the unity of languages, is satisfactorily shown from the investigations into the natural history of man, into which we cannot now enter.

The opinion held by many distinguished writers, and among the rest by Dr. Blair, that the primary state of language was extremely defective, and that, in the progress of many thousand years, it attained perfection by gradual development, as I have already stated, is not based upon the history or nature of language.

For, first, the experience of several thousand years does not afford a single example of spontaneous development in any speech. Wherever we meet language, we find it complete as to its essential and characteristic qualities. If an alteration do take place, it is only by the springing up of a new language, Phœnix-like, out of the ashes of another, as the Italian out of the Latin, and the English out of the Anglo-Saxon. But these languages are perfect and complete, and in nothing as to essentials inferior to the most admired language; and in some respects superior to many others. So it is with the Hebrew. The essential structure of the language is apparent in the earliest fragments, as well as the latest, and is apparently incapable, though very imperfect, of any further improvement. So it is with the Latin and Greek, as may be seen when you compare the earliest with the latest productions in those languages. "If there be a gradual development in language, why, in the thousands of years neighborhood with other languages, has not the Semitic family formed for itself a present tense? And why has not the Chinese language, so devoid of grammatical structure that it seems the very copy of the forms of thought expressed in the signs of the deaf and dumb, contrived to frame, what we consider indispensable to the understanding of speech." "The ancient Egyptian, as written in hieroglyphics upon the oldest monuments and in the Coptic of the liturgy, after an interval of three thousand years, you will see established by Lepsius to be identical."

Indeed so far is language from developing itself in the progress of time, that it is ascertained that the earliest stages of a language are often the most perfect. Languages, in the words of Wiseman, grow not up from a seed or sprout. "They are, by some mysterious process of nature, cast in a living mould whence they come out in all their fair proportions; and that mould is the mind of man, variously modified by the

circumstances of his outward relations." If any weight is to be attached to the opinions of the learned on this subject, we refer to the most distinguished comparative philologists of this century, who agree in this view of the subject: Frederick Schlegel, Klaproth, Baron W. von Humboldt, Wiseman, Grimm, Bopp, and others.

Thus far then we have shown, that there are groups of languages resembling each other so much, that they can with propriety be called families, such as the Indo-European or Japhetic, the Semitic, and American. 2d, We have shown, that these families, so far as their connexion with each other has been traced, indicate a common origin. 3d, The deficiency in the proof, if it be inadequate from the want of sufficient investigation, is made up by the argument from the natural history of man, which indicates one original pair and therefore one language. 4th, The separation was by a violent cause. 5th, Languages are not gradually developed in the progress of time, but are often the most perfect in the earlier stages. 6th, To this may be added, the striking similarity in the alphabets of languages, so far as they exist and have been made known to us.

To these arguments derived from history, let us adduce the testimony of the inspired volume. We are informed that Adam was made perfect, a rational and intelligent creature. He must have been endowed with the power of communicating his ideas, or his rationality would have been of little value. We find, in fact, that he was endowed not only with the faculty of speech, but with speech itself, and that he was speedily required to exercise it. God spake with him. He was required to give names to the various animals that were brought to him. Language then, and the faculty of speech, we may safely infer, were the immediate gift of God, belonging essentially to the nature of man, as much as any of the senses, or the reasoning faculty.

What this one language was, which was originally with Adam, and was transmitted through Noah and his sons to the post-diluvians, we have no means of determining. This much, however, appears certain, that it was not the Hebrew. For the sacred writer informs us, that the whole earth was of one language, and one speech. This language must have been the most ancient. By reason of the impious attempt of the people to raise a tower as high as heaven, God confounded their language, so that they could not understand each other. In consequence of which, they were dispersed from thence over the face of the whole earth. If the confusion of languages originated the differences which appear in them, then these several languages are all of equal antiquity. Of these the Hebrew, as a distinct language, was not one, for the Hebrew nation

was of posterior origin. It is true, Heber dwelt in Mesopotamia, the ancient Shinar, and must have spoken one of the languages of the confusion, subsequently modified by the peculiar circumstances in which the Hebrews were placed.

In relation to the diversity of languages, upon the supposition of an original unity, the learned differ. Some assert confidently, that from the examination of languages, the separation among mankind is shown to have been violent. Not indeed that they voluntarily changed their language, but that they were rudely and suddenly divided from one another. (Herder.)

Others, and among them Noah Webster, regard such a supposition unnecessary, believing that the differences originated in the natural course of events. Both unquestionably are true. Concerning the dispersion, there can be no doubt, because it is sustained by divine authority. Concerning the progressive changes, history and experience furnish sufficient evidence. A comparison of our own language, as it now exists, and in the days of Chaucer, will be sufficient. Some words become obsolete, new words are coined. New modes of pronunciation and of spelling are introduced. Words lose their original and obtain a new signification, whilst other words are variously compounded, and changed by prefixes and suffixes.

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VIRGINIA, THE PROPER NATIONAL NAME FOR THE U. STATES OF  
N. AMERICA.

In the first No. of the *Linnaean Journal*, Prof. Haldeman, in a very interesting paper, proposes *Hesperia*, as a distinctive name for the U. States. With the reasons there assigned for the assumption of a distinctive name for this confederation we are perfectly satisfied. Certainly it is high time that we, who have so long taken our stand among the nations of the earth, should have a National name. "The United States," is not only an inconvenient phrase but it conveys no distinct idea. "Of what country are you a citizen?" inquires a foreigner of one of our travellers. Upon being told, of the United States, he asks again, "Of what United States?" and if he is told "of the United States of North America," he may be asked if he resides in Mexico? But if we call ourselves Americans, that term is equally objectionable, as it is equally descriptive of a dozen different nations.

But I am not satisfied with the name *HESPERIA*, which Prof. Haldeman proposes as our cognomen. My principal objections to this are two: 1st, it has already been appropriated to other nations; and 2d, it

has never been applied to us. Either of these would to my mind be a sufficient bar to our assumption of the title, Hesperians. We should not dress ourselves in the cast off clothes of antiquity, nor would we know ourselves nor be known by our neighbors in such a dress, which would certainly set rather awkwardly upon us.

WASHINGTON IRVING, a name dear to American literature, and of the highest authority among us in matters of taste and literature, has proposed APPALACHIA, as an appropriate appellation, and this idea has been endorsed by the New York Historical Society. I have not seen the reasons given in support of this name, but suppose that there is no other of any importance than the existence of the Alleghany mountains in our territory, and constituting one of the most important features of our physical geography. This would have been a very good reason, if the original discoverers and colonists of this country had taken it into consideration, but as they did not, and as we have now existed over two hundred years as a people, without any intimation of an intention thus to designate ourselves, it is rather late to take it now.

Various other names have been proposed, and much ridicule has been cast upon the whole matter, yet I shall venture, in the face of all this, to give some reasons for our being called VIRGINIANS, which I am rather surprised have never yet been urged upon the country, especially by the patriotic citizens of Virginia, that "mother of noble sons."

First, this is the original and proper appellation of the greater portion of the territory now embraced in the United States, and especially of that part of our nation which achieved our independence and established our constitution and government. This is evident from the following passage from that valuable and interesting, though quaint work, "PURCHAS HIS PILGRIM," originally published in 1617, and written contemporaneously with the foundation of Jamestown.

His first chapter on America is headed, VIRGINIA; in the preface to this, p. 938, he says: "After this followed the plantation by the present Adventurers, for the foundation of a *New Britan* Common-wealth: and the East and West parts of England ioyned in one purpose of a two-fold plantation, in the North and South parts of Virginia. Of the North parts our Method requires first mention. Mawooshen was many yeeres together visited by our men, extending betweene deg. 43. and 45. fortie leagues in bredth, and fiftie in length."

Again on p. 939, he says: "But your eyes wearied with this Northerne view, which in that winter communicated with vs in extremitie of cold, looke now for greater hopes in the Southerne Plantation, as the right arme of this Virginian body, with greater costs and numbers fur-

nished from hence. But first let me tell you that by some lately these Northerne Parts are stiled by the Name of NEW-ENGLAND, as being supposed in the same Latitude with Noua Albion on the South Sea, discovered by Sir *Francis Drake*, hauing New France on the North, and the Southerne Plantation of Virginia on the South; New Spaine, New Granada, New Andalusia, being in the same Continent. A Map and late Discouerie hereof was set forth this last yeere by Captaine *John Smith*, with new English names exchanged for the Saluage. It lieth betwixt 41. and 45.—This present yeere 1616. eight voluntarie ships went thither to make further triall: and hereafter wee hope to haue English Colonies renewed, in this Northerly Plantation newly called New-England.” p. 940.

Secondly, Virginia was the germ out of which our nation and our national institutions were developed. It was there our first colony was planted. There our free form of representative government was first established, when in 1610 Governor Yearly convened the first General Assembly, which was composed in part of the freely chosen representatives of eleven different boroughs. This was a year before the landing of the Pilgrims at Plymouth. Virginia, too, first drew the sword for the common defence of the Colonies, when Geo. Washington was appointed Commander in Chief of the army of Congress. And it was the hand of a Virginian that wrote, and his lips that first uttered the “Declaration of Independence,” the charter of American liberty.

Thirdly, during the whole of our national existence Virginia has been the dominant State of the Union. During the Revolution she furnished the man around whom alone all hearts and all energies could be rallied as the leader of our armies. Since then, down to the present day, she has continued to fill the Presidential chair with her sons for more than one-half of the period of our independent national existence, having given us four Presidents, and the late Vice-president, whose administrations cover 36 out of the 69 years of independence. We might show this ascendancy of the “Old Dominion” in various other ways, but this will suffice.

Fourthly, there is no other national name that has an equal claim to our acceptance. “Yankees” is a soubriquet which can never be elevated to the dignity of a national name, nor has it the corresponding word which would designate our country. “New England” has never been applied to more than a part of this country, and the combination of the adjective with the substantive makes it objectionable. Besides, our population is from almost every nation under heaven, and a large body of them feel no ambition to be called English, nor even Anglo-Americans.

Finally, it is no objection to the reception of the name Virginia, that it has already been appropriated to a state. The state of Virginia and the United States of Virginia would be easily distinguishable, and no inconvenience would result. "A Virginian" would be none the less a Virginian because he was an inhabitant of that state. Nor should we think that the inhabitants of the other states would feel insulted by receiving a general designation around which cluster the most glorious recollections of our republic. Further, we think that this name would be a kind of talisman, a word of mighty power to exorcise the foul fiend of disunion, and to bring together and keep together those who, we trust, will ever have "one country and one destiny," whether they live upon the granite hills of the North, or the sunny plains of the South, from Maine to Louisiana, and from the Atlantic to the Pacific.

We conclude with the following passage from old Purchas, which, though rather long, we think worth copying both for its beauty and for its bearing upon our argument:

"Leaving New-France, let vs draw neerer the Sunne to New-Britaine, whose Virgin soile not yet polluted with Spaniards lust, by our late *Virgin-Mother*, was iustly called *Virginia*. Whether shall I here begin with Elogies or Elegies? Whether shall I warble sweet Carols in praise of thy lonely Face, thou fairest of *Virgins*, which from our other Britaine World, hath wonne thee Wooers and Suters, not such as *Leander*, whose loues the Poets haue blazed for swimming ouer the Straits betwixt Sestos and Abydus, to his louely *Hero*; but, which for thy sake, haue forsaken their Mother-Earth, encountred the most tempestuous forces of the Ayre, and so often ploughed vp *Neptunes* Plaines, furrowing angrie Ocean, and that to make thee of a ruder Virgin, not a wanton Minion, but an honest and Christian Wife? Or shall I change my accent, and plaine me (for I know not of whom, to whom, to complaine) of those disaduentures, which these thy louely Louers haue sustained in seeking thy loue; What enuie, I know not, whether of Nature, willing to reserue this Nymph for the treasure of her owne loue, testified by the many and continuall presents of a temperate Clymate, fruitfull Soile, fresh and faire streames; sweet and wholesome Ayre, except nere the shore (as if her iealous policie had prohibited forraine Suters:) or of the Sauage Inhabitants, vnworthy to embrace with their rustike armes so sweete a bosome, and to some conceined indignitie, that some Parents should thither send their most vnruely Sonnes, and that our *Britannia* should make her Virginian lap to be the voider, for her lewder and more disordered Inhabitants, whose ill parts haue made distastefull those kinder offices of other our Britaine Worthies, which else had

beene long since with greatest gladnesse, and the recompence of her selfe entertained: Or whether it be Virginian modestie, and after the vse of Virgins, shee would say Nay at first, holding that loue surest in continuance, which is hardest in obtaining: Whether any, or all of these, or what else hath hindred; hindered we haue been, and haue not obtained the full fruition of her Loue, and possession of her gainefull Dowrie, which yet now (more than euer before) she seemeth to promise, and doubtlesse will quickly performe, if niggardise at home doe not hinder. And should men be niggardly in this aduventure, where *Nabal* must needs verifie his name, where keeping loseth, aduentering promiseth so faire a purchase? Miseric of our times! that miserable men should here want what they already haue, and refuse to haue there, at no rate, abundant supply to their too miserable feares of want. Lift vp your eyes, and see that brightness of Virginia's beauty! which the Mountaines lift vp themselues always with wilde smiles to behold, sending downe siluer streames to salute her, which powre themselues greedily into her louely lap, and after many winding embracements, loth depart, are at last swallowed of a more mightie corriual, the Ocean: He also sends Armies of Fishes to her Coasts, to winne her Loue, euen of his best store, and that in store and abundance: the Mountaines out-bid the Ocean, in offering the secret store-houses of undoubted Mines: he again offereth pearles: and thus while they seeke to out-face each other with their puffed and bigge swollen cheekes, who shall get the Bride; the one laies hold on the Continent and detaines the same, maugre the Oceans fury, and he againe hath gotten the Ilands all along the Coast, which he guardeth and keepeth with his watery Garrisons. Virginia, betwixt those two sowre-faced Suters, is almost distracted, and easily would giue entertainment to English loue, and accept a *New Britain* appellation, if her husband be but furnished out at first in sorts and sutes, befitting her marriage solemnitie: all which her rich dowrie would maintaine for euer after with aduantage." PENN.

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 ANT-IANA, NO. V.

About the middle of July, I met with a colony of ants of a different species from any yet described. They were of a red brown color, and in some respects, their habits were different from any yet noticed. They did not travel at random in search of food as some others do; but they had constructed regular tunnels or walks, partly excavated, or arched over with small pieces of sticks, bark, or leaves, along which they were passing in considerable numbers. I found there were lateral branches

extending in different directions, leading to the trees or bushes to which the ants resorted to obtain food from the *aphides*, of which they had no less than five species feeding on different sorts of trees.

I was much interested in observing the care and concern the ants manifested for these insects, and the expedients they employed to preserve them from rival ants and their enemies. I noticed they were very industriously engaged in collecting small pieces of sticks and leaves together, and placing them round the foot of the tree and bushes on which the aphides were feeding, thus forming a kind of tube or enclosure several inches in height; they had also constructed arches over the roots of one of the trees, which were nearly on a level with the surface of the ground. On examining these arches, I found they contained aphides surrounded by ants.

One of the trees (a beech,) had a cavity on one side of the trunk, extending about two feet from the ground, which the ants had arched over in a very ingenious manner with small pieces of bark and leaves, in which they had secured a portion of their stock of aphides. These enclosures communicated with the excavated roads which led to the nest, which was located in a partly decayed log.

The nest was constructed by removing portions of the decayed substance, and leaving that which was of a firmer texture, thus forming numerous cells and cavities, in which they had a large quantity of *larvae*.

This species of ants appears to be of a migratory character. Having disturbed them to ascertain whether the colony was numerous, I found them on the following day busily engaged in carrying away the *larvae*. In following the train, I found they were migrating to a new settlement about ten yards distant, among some large stones. They were employed three or four days in removing to their new abode.

About the same time, I met with another colony of the same species removing to a new nest, and on tracing them, I discovered the old nest about 100 yards distant.

Being informed that there were some ant hills a few miles from my house, I went to see them. They were situated on the top and south side of an elevated piece of wood land. These ant hills were the largest I had ever seen: some of them were two feet six inches in height, and from ten to fifteen feet in circumference at the base. On opening one of these hills, I found it contained a great number of galleries, or avenues, along which ants were moving in great numbers. These mounds seemed to have been formed by removing the earth from below, and placing it outside. There were about 40 of them on a space of ground, not exceeding two acres, and some of them were within a few yards of

each other. The ants I saw, were very busy feeding from the aphides, on the oaks in the vicinity. I never before witnessed such a collection of ants: the ground and trees were almost alive with them. Taking out my watch and counting the number that passed up a tree under which I stood, in a minute, I found the number was 75, making 4500 in an hour.

RUSTICUS.

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NEW MODES OF CAPTURING INSECTS.

In the "Naturalist's Library" for Entomology, vol. iv, which treats of British Moths (*Crepuscularia* Lat.) pp. 102—107, we find the following simple modes of capturing these beautiful insects. The first is given by Rev. C. S. Bird, of Berkshire, England, as follows:

"My success in obtaining lepidoptera, to which I am particularly attached," says he, "I owe to the use of a lamp to attract moths. During the moonless nights of summer, I sit with lamps, placed on a table close to the window. The moths speedily enter the room, if the weather be warm. I have had a levee of more than a hundred between the hours of ten and twelve. In the spring, too, and autumn, I have frequently been fortunate, though generally having my patience sufficiently tried. In March, for instance, I have taken many specimens of *Biston prodromarius* in one evening; *Glaea rubricosa* and *Lytæa leucographa* have accompanied them. In April and May, *Cucullia fissina* and *Peridæa serrata* have visited me. When November has arrived, *Petasia cassinea* and *Pæcilocampa populi* have crowded into my room. Of course at such cool times of the year the window must be kept shut till the moths knock for admittance. If at any time of the year a warm mist pervade the air, there is almost a certainty of success. But should any one be induced by this account to try the lamp, he must make up his mind to experience more of unfavorable evenings than favorable. There is, however, this advantage in my sedentary plan of mothing, that it can be combined with reading or writing; and the intervals between the arrivals need not be lost.

"Moths are extremely sensible of any keenness in the air; a north or east wind is very likely to keep them from venturing abroad. Different species have different hours of flight. Thus, on a mild and dark November evening, *Pæcilocampa populi* will occupy from seven to ten o'clock after which it will make way for *Petasia cassinea*, which will fly till one or two in the morning. I have, for experiment's sake, sat up in the morning till three o'clock, when the whole heaven was bright with the rising sun, and moths of various kinds have never ceased arriving in succession till that time. Some of them must come from a con-

siderable distance. *Scotophila porphyrea*, being a heath moth, must come nearly a mile.

“It may likewise be worth while to say a word on my method of securing my prey. Suppose that, either with or without a *bag-net*, I have imprisoned a moth under an inverted wine-glass, I then light a small piece of German tinder, half the size of a sixpence, or less, and introduce it under the edge, and by means of the smoke the insect is stupified almost immediately. It is then wholly in my power, though it would quickly revive:—I pierce it; and, by means of a pin dipped in oxalic acid, and thrust into the body beneath the thorax, I prevent its revival, and fix it on the settling board. The German tinder does not injure the color, as brimstone would, whilst it puts the moth so completely in my power for a few moments, that the specimens I thus take and kill are often as perfect and beautiful as if I had bred them. Of course, I use it for insects taken in the day, or bred, as well as for those captured by the lamp.”

The other method is that of P. J. Selby, of Twizel, England, and has been attended with the most complete success, as will be seen from the subjoined account, which we give in his own language :

“In the course of my entomological pursuits,” says he, “my attention was first directed to the mode I have since adopted for the capture of nocturnal lepidoptera, by the extraordinary success that I understood had attended the exposure of a sugar-cask, recently emptied, in a favorable situation; and by means of which attraction a great variety of moths, some of them of very rare occurrence, had been secured. As sugar casks are not easily procured in this country, I bethought myself of some succedaneum, and it presently struck me that a beehive, or as it is generally called here, a *skep*, recently emptied of its honey, or well anointed with the same, might answer the purpose, as it was evident the insects were attracted by the saccharine matter and smell. I accordingly had one prepared, and the very first evening was convinced that it would prove a very efficient trap, as several moths of different species were seen and taken upon it.

“The *skep* should be well anointed on the exterior with honey (the refuse will answer perfectly well,) and should be supported on a forked stake about four feet from the ground, or so that the insects can be easily got at and enclosed in the flappers as they alight and settle upon it. In this way they may be taken in as fine and perfect condition as if they had been bred from the larvae within doors. I generally select a sheltered situation and near to wood; of late I have had it near a service tree, whose berries, I had previously observed, attracted the moths.”

## FRAGMENTS ON THE BEAUTIFUL.

Of the effects and power of that which men call the Beautiful, I shall say little. But we shall have to do with effects only as they throw light upon causes. It has ever appeared to us that in the investigation of reasons, in nature, in art, and in morals, the chief ground of failure in attaining definite and satisfactory results, has been, that men have looked too much for the proximate and too little for the final cause. They have referred facts confessedly of the same general class to different agencies, forgetting that it is the community of their origin, which has thus thrown them together. Instead of investigating in the world of taste the great principles of emotion, they have amused themselves with making catalogues of the secondary agents. Nor is the reason difficult to attain; for far less of observation and acuteness is required to show that a consciousness of the beautiful is excited by a rose, a landscape, or a charming face, than to tell, why and how they produce it, and in what sense they are its cause.

On this subject the most important inquiry is that, which seeks the one general principle to which all this class of emotions is to be referred. The theory which we shall present on this vexed subject, is purely the result of a personal examination of evidence and consciousness. Others may have come to the same conclusion with ourselves, indeed with our full conviction of its simplicity and truth, we can scarce conceive how it could be otherwise. But to them, should we be so happy as to prove our point, we have no debt to acknowledge—neither shall we shelter ourselves beneath their names if our view shall be censured as untenable, nor charge on them the offence of our perversion.

The beautiful is not in the object contemplated, but in the soul that contemplates it. The eye and the ear only guide the hand of the spirit as it draws forth by the aid of nature seen, or the invisible world of thought, the beautiful already existing within itself, and which by their help may be best developed. The idea has been maintained, that there is an intuitive perception of what is beautiful, that the soul has in itself a kind of model by comparing objects with which it pronounces them beautiful or the contrary. For thus they reason: when we see an object which we at once pronounce to be beautiful—we must do so by comparing it with some standard already existing in the mind. Now, this standard cannot be the recollection of any other beautiful object previously seen, for to suppose so only shifts the difficulty. For what made me think that former object beautiful? How came I for the first time to regard an object as beautiful? From this they infer, that there

is a primitive pattern or archetype of beauty originally existing in the human soul, "by a reference to which all the principles of taste are determined." This theory is beautiful—and in the spirit of philosophy strives to attain a unity of cause. Had it rejected the absurdity of intuitive ideas, and assumed the soul itself in the exercise of its finer perceptions, as the model, and shown it grasping all that was in communion with it in the outer world, and in the ideal world—then would it have approached the truth.

The spirit of man within him is capable of richest music. As two instruments in perfect unison will both vibrate, though but one be struck, thus the soul of man thrills with the undulations of whatever it encounters in entire harmony with its own chords. Without it, and within it, there must be that which tunes it, but this destroys not the integrity of its own action. Like the Æolian harp, it may not sound without the winds that sweep above it, yet its heavenly music springs from its own wires. Though the hand that touches it be unseen, the notes are too varied, too rich, and too frequent to betoken less than the power of some high spirit. Many of its emotions may be traced to the great laws of relation and association, but the most and the highest to a spirit of intellectual beauty pervading the Universe which the eye sees not, and the ear never hears. But its melody is caught by the soul within; and that other sense, whose organ is all of man's higher nature, brings it to his perceptions. To the poet more of it is given than to mere men. In him, though the light of this outer world should be cut off, and men of clay should call him blind, his soul glows with heavenly rays of poetry and prophecy, and the urgings of the divinity within him give to the world "high thoughts, which voluntary move harmonious numbers." With our whole soul we join the eloquent apostrophe of Akenside:

"Mind, mind alone, bear witness earth and heaven,  
The living fountains in itself contains,  
Of beauteous and sublime."

\*            \*            \*            \*            \*            \*            \*

That the picture of a beautiful object does not charm us as deeply and as long as the reality, is a proof, that it is not the eye alone from whence the conception of beauty arises.

How often are emotions of the beautiful excited, where, by the admission of all the vividness even of the mental image, it bears no ratio to the excitement of feeling. It is not true, that the mind always forms to itself or pictures the object which excites the beautiful. The most charming and delicate conceptions of the great poets are precisely such as no painter can represent, and no imagination embody. We cannot

see their abortive efforts without being reminded of the kindred attempt of Raphaël in his picture of Pharaoh's Dreams; and those who have seen the engraving of it, will bear me out in saying that his Dreams look for all the world like pancakes stamped with figures of lean kine—withered ears! Who ever saw or imagined a picture of Ariel, the sweetest of spirits? Why the very thought that his form was gross enough to detain color, or to be apprehended by the eye, mars half his wondrous beauty. The chief charm of the Christobel, of Coleridge, is that she leaves no distinct image. Brick and mortar critics have called it an incomplete poem. Its beauty, like that of an ancient ruin, is, that it is not entire. But some critics would think it an improvement to the Venus of the Medicini if she were completed by a fashionable robe of Alpaca lustre. By a neglect of this principle, Scott has fallen under censure for the introduction of supernatural agency in his novel of the "Monastery." The objection which has been made, is partly founded in truth: but it does not lie against the White-Lady of Avenel, as a spiritual being of a higher sphere—but arises from her offence against that law which regulates the beautiful in the introduction of supernatural. Her image is too distinct. We see her too closely. When the great Magician has said to us,

"The fringed curtains of thine eyes advance  
And say—what see'st yonder?"

When we behold the lady bending her lofty powers to win a poor tailor, whose soul she intends to pierce with a "bare bodkin," we are ready to cry out—

"She is no spirit;  
She eats and sleeps, and hath such senses  
As we have such."

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#### GRECIAN EDUCATION, NO. II.

The Grecian games exerted a powerful influence, not only on the physical, but likewise on the intellectual training of the people. Literary exercises were a part of the contest. This topic will find a place for more extensive examination hereafter. Although education was not neglected by the different states, each one directing its attention to it, it was far from being uniform. When the Athenians and Spartans are compared, a very great difference is perceived. They were of the same nation, but widely apart in their character. This will be easily explicable, when it is seen how peculiar was the Lacedæmonian plan of education. In developing the subject of education, the attention will be

directed ultimately to that of Athens, as it is presented in Attic writers—at present the system of the great Spartan legislator, Lycurgus, will furnish us employment. The great power of education in forming man and giving him a specific direction, may be seen strikingly displayed in the hardy and courageous Spartans. With the state of things which gave rise to the labors of the renowned lawgiver of Sparta, it is not necessary to intermeddle. Its civil and political arrangements are well known.

It is education as it existed amongst them, that claims investigation. They were a peculiar people; long did they retain their distinctive features; and it is, assuredly, instructive to examine, either in whole or in part, its causes. Amongst the most powerful of these, as was to be expected, was the training of their children, which was so essential a part of their system. The wisdom and patriotism of Lycurgus preclude the idea that he would leave unembraced, in the constitution which he prepared for his country, the regulations which were necessary for the rising generation. Well was it understood in that day, “just as the twig is bent, the tree’s inclined.” When Xenophon, as he relates in his *Πολιτεία Λακεδαιμονίων*, reflected on the fact, that Sparta, a city with a sparse population, had become the most populous and renowned in Greece, it created much surprise, but when he looked at its arrangements he no longer indulged in such emotions. In them he saw the solution of the whole. The mystery was unravelled. Great was his admiration of the genius of the man who invented and carried out this plan. He ranked him amongst the greatest sages, *καί εισ τα εσχατα μαλα σοφον ηγουμαι*. No blind copyist of others, he marked out a course diametrically opposite, and nevertheless elevated his country to the highest glory and happiness.

Examining more particularly the arrangements which prevailed, we learn that the children belonged to the state, and were under parental control only so far as did not interfere with its paramount authority. The government made provision for their education, provided supervision, directed the Ephori to attend to them, and appointed others to discharge special duties—variously designated as *αμπαιδες*, *ρειθισαιοι*, and *παιδονομος*.

Every citizen was, in addition, invested with paternal supervision, and could reprove what was amiss whenever it might occur—either on the street or in the Gymnasium. *Παντες οιομενοι παντων και πατερεις ειναι και παιδαγωγοι και αρχοντες*, says Schwartz, to whom we are indebted for many of our facts. Sparta’s desire and joy was a beautiful and brave race, sound in body and mind; blooming sons and daugh-

ters. Different, we refer again to Xenophon, was the usage of other Greeks from that of the Spartans. "As soon as they are capable of understanding any thing, the other Greeks who aim at a superior education, give their children to slaves as pedagogues, and send them to teachers to learn reading, writing, music, and gymnastics. They furnish their boys with shoes and garments in excess, and permit them to indulge their appetites without restraint." Lycurgus employed no slave in this service, but gave them to the care of the *paidonomoi*, who exercised control over the whole, and could inflict punishment. In his absence one of the citizens took his place, so that the boys might not be alone. The best men were selected from the different divisions of the people, that there might always be a suitable leader. For the infliction of punishment, some of the *Ephobor* were employed who carried whips *μαστιγοφοροί*. This produced great decorum of behavior and conformity to the law.

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 CLASSICAL CRITICISM.

THE READING ALUNT FOR AGUNT IN CICERO PRO ARCHIA POETA, C. IV, § 16.

"Nam ceterae neque temporum sunt, neque ætatum omnium, neque locorum; hæc studia adolescentiam agunt, senectutem oblectant, secundas res ornant, adversis perfrugium ac solatium præbent, delectant domi, non impediunt foris pernoctant nobiscum, peregrinantur, rusticantur."

For other studies are not suited to all circumstances, to every age, or to every place; these attract youth, amuse old age, are an ornament in prosperity, a refuge and a consolation in adversity, are a source of gratification at home, do not interfere with our movements abroad, are with us during the watches of the night, accompany us in our travels, and retire with us to the country.

This celebrated and beautiful passage contains two very interesting various readings. The first of these, *ceterae* for *cetera*, has not attracted so much attention but has been generally adopted since the time of Ernesti. Although I have strong doubts of its correctness, I retain this reading as a matter of convenience, because it does not alter the sense. Whether *ceterae* be referred to *animadversiones*, inferred from the preceding sentence, (as suggested by Möbius in his edition of Cicero i. p. 266, and adopted by Dr. Anthon in his *Select Or. Cic.* 1843,) or to *litterae* as others maintain, the translation which we give above will be correct, though I cannot but regard both of these connections as far-fetched. To use *cetera* either as an indefinite term or to refer it to *studia* in the following clause, appears to me much more simple, and I should, on this account, prefer retaining the common reading.

But that *agunt* is the correct reading I have no doubt whatever.—Dr. Anthon, who has *alunt* in his text, which is based upon Ernesti's, but here departs from it, states the case thus: "The MSS. all agree in reading *agunt* for *alunt*, but we have given *alunt* with Lambinus, Manutius, Orellius, and others, as more in accordance with the spirit of the passage." This gives up the historical proof altogether, and rests the defence of the proposed reading entirely upon the laws of taste. But it is from the inconsistency of *alunt* with the context, and the greater appropriateness of *agunt* to the sense of the passage that I would derive additional arguments in its favor.

I can not see that *alunt* can be so rendered as to make good sense. It is true Duncan, p. 292, translates the phrase, "But these give strength in youth," and Dr. Anthon, p. 201, n. 2, says, "These studies, however, foster our earlier years." The idea which these editors would convey appears to be, that literary pursuits are the proper food of the young mind which they strengthen and develop. But I know of no authority for giving such a meaning to *alere*. If Cicero had wished to convey this idea he would have said "*hæc studia ingenium adolescentium alunt*," or the like. It is true, Ernesti also declares that *alunt* would give the same meaning as *agunt*, but he points out no instance in which *alere* can be thus rendered; the only peculiarity which he notices in Cicero's use of this word is in the phrase "*Pompejus aluerat Cæsarem*," where he explains it, "*potentem reddere*"=to render powerful; see Ernesti Clavis Ciceroniana, sub voce *Alere*. I understand Möbius to agree with Matthiä, whose works I have not seen, that *alere* cannot be used in the sense of "*alere animos adolescentium*."

Nitzsch in his Index Scholarum, has defended the reading *alunt*, by saying that "*alere* properly signifies to supply with those things which render us strong and active, *nutrire* to supply with food, which satisfies the appetite and increases the body, being, as it were, the material of the body," but Horace says of a river, "*Quem super notas aluere ripas*," and various other passages inconsistent with this restriction might be cited. So far as I am aware, *Alere* means; 1) *to feed*, to supply with food, as *alere canes, ali lacte*, Cic. 2) *To cause to grow*, which is a consequence of the supply of food, as in Plin. *folia,—capillum alunt*, and in Cicero, *Honos alit artes*. 3) *To increase*, in any way, as in the passage cited above from Horace, and in Cicero's expression, "*Pompejus aluerat Cæsarem*," and so Justin has "*alere incendium*." 4) *To defend*, or *treat with favor*, as in Cæs. "*civitas quam ipse semper aluisset*." None of these meanings will suit our context, and we therefore decide against *alunt*.

In favor of the reading *agunt*, we urge, 1) That all the MSS. have *agunt*. 2) That it is not probable that *alunt* would have been changed by transcribers into *agunt*, but rather the reverse, the latter being the easier form. 3) The primitive idea of *ago*, whether in Latin or Greek, is *motion*, without any reference to its direction. From the idea of bringing to a place is very easily derived that of *pleasure accompanying the action*, which I have ventured to express by the English word “*attract*,” although I must admit that I have no other example of this at hand, whilst I agree with Heindorff in regarding the passage, *seu te discus agit*, in Horace Sat. ii, 2, 13, as throwing light upon it, though Möbius expresses surprise at this in his Cic. 266, § 16. If, however, Dr. Anthon is correct in his note on this passage, (Hor. 282, 13.) and *agit* is there used “in the sense of *delectat* or *allicit*,” our point is fully established. At all events, 4) with this sense we can see a connection between “*adolescenciam agunt*, and *senectutem oblectant*,” whilst in “*alunt*” &c. we can see none.

*Pennsylvania College, June 1. 1845.*

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#### SAGACITY OF A HORSE.

Many interesting stories of the sagacity of that noble animal the horse, are related in books on natural history; but I have lately heard an authentic one which has never yet been recorded. A friend of mine possesses one of the most sensible horses I ever saw, and it may well be supposed that he is a great favorite in the family. About the stable in which he is kept, there are several large dogs, who are on good terms with the horse, and when the latter is allowed to walk about the stable yard, he and the dogs play together quite familiarly. One day, the coachman filled a bucket of water for the horse and set it down to him. The dogs were also very thirsty, and attempted to drink at the same time their equine companion was slaking his thirst. This annoyed him—he tried to chase them away, but they would not stay away,—he bit at them, but they returned to the bucket,—he tried various means to monopolize the water, but the obstinate dogs would persist in drinking. At length, weary of all his previous efforts, and unwilling to disable his canine friends, which he might have done by a kick or real bite, he took the iron handle of the bucket in his teeth, carried it into the stable, and lifted it into his trough, where he drank to his *full* satisfaction, without being annoyed by the dogs—as much as to say “after me is manners!”

RUSTICUS.

## COMMON THINGS, NO. I.

## VINEGAR.

Vinegar exists ready formed in many plants, and is sometimes found also in animal fluids. It is an abundant product of fermentation, and is yielded in large quantities by all liquids that contain alcohol, as also by some infusions in which this principle does not enter as an original constituent.

Vinegar, for domestic purposes, is commonly prepared by exposing beer, cider, or other spirituous liquors, mixed with some suitable ferment, to the action of the atmosphere, at a temperature of about 70°. The best vinegar for table use is made of rich cider, by the ordinary process of fermentation. Watered cider (technically so called,) makes good vinegar, though we have been assured that one barrel of pure cider will make  $1\frac{1}{2}$  of prime vinegar. But if the vinegar is too strong it is easy to dilute it, and we therefore prefer making our vinegar out of the best cider we can obtain, without the addition of any water in the first instance.

A friend well known for the successful application of his extensive chemical knowledge to practical purposes, gives us the following as his mode of making vinegar for domestic use: To ten gallons of pure water, add one gallon of molasses and about half a gill of yeast, (a pint to 30 gals.) or a proportionate quantity of any kind of leaven. Put this in a vessel sufficiently large to allow the fermentation to go on rapidly, and with a temperature of from 70° to 80° it will be fit for use in from 6 to 8 weeks. At a lower temperature fermentation will, of course, be slow. A handful of green coffee thrown into the barrel with these materials, is also said to give this vinegar the flavor of cider-vinegar, to which it is in all other respects equal.

In some places, particularly in the vine growing countries of Europe, extensive establishments, termed Vinaigreries, are fitted up for the manufacture of vinegar. Diluted wines are here placed in tiers of vessels, well supplied with atmospheric air, and kept at a uniform temperature by means of flues. A portion of the contents is drained from each cask at regular periods, the residue being left as a ferment for the new wine which is then added. The vessels are completely cleansed once in ten years. The period required for fermentation is variable, and is often affected by causes which cannot be exactly ascertained.

Vinegar may also be obtained by the distillation of wood. The wood is placed in large iron cylinders, and exposed for some hours to a high heat, acetic acid is disengaged, accompanied by water, empyreumatic oil, carbonic acid, carbonic oxide, and carburetted hydrogen.—

The crude vinegar must be rectified by redistillation, and the impurities separated by chemical means. - This product was formerly regarded as a peculiar principle, and known under the name of pyroligneous acid. The woods most suited for this manufacture are the harder kinds, as oak, ash, beech, birch, &c. ; pine will not answer.

Vinegar, or acetic acid, cannot exist but in combination with water. For chemical purposes it may be procured of the requisite strength and purity in several ways. Before the process for procuring pyroligneous acid was known, chrystalized verdigris (binacetate of copper,) was distilled at a high heat, and the vapors condensed in a succession of cold receivers. It may also be procured by decomposing acetate of potash with sulphuric acid. The presence of other acids with which it is sometimes adulterated may be detected by the ordinary chemical tests.

A beautiful experiment illustrative of the conversion of alcohol into acetic acid, may be made by placing a portion of black platina powder over a saucer of vinous spirit and confining the whole in a glass receiver. The mutual action of the two substances will cause a considerable increase of temperature, and in a few minutes acid vapors will be seen to condense and trickle down the sides of the glass.

The impure vinegar from wood or pyroligneous acid is extensively used in the preparation of the salts of Alumina, and iron used by calico printers, and for various other useful purposes in the arts ; it also possesses anti-putrescent properties, and may be employed to prevent the decomposition of animal tissues.

H. H.

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A number of other gentlemen have been elected Honorary Members, but not having notified the Society of their desire to be considered as such, are omitted in this list. If any gentlemen find themselves thus passed over through mistake, or in consequence of their failure to signify their acceptance of membership, they can notify the Corresponding Secretary of the fact, and their names will appear in the Record and Journal from time to time, as we design thus noticing all accessions to the Society.

## RECEIVED FOR THE LINNAEAN FAIR.

Two boxes of sundries, from the Ladies of Reading, Pa.				
Two	"	"	"	York, Pa.
One box	"	"	"	Philadelphia.

## APPEAL

TO THE FRIENDS OF LITERATURE AND SCIENCE,  
IN BEHALF OF THE LINNAEAN ASSOCIATION.

The establishment of a Linnaean Association in Pennsylvania College, was an event that will occupy a preminent place in the annals of the Institution. It was a happy circumstance that the spirit of enterprise, that had for some time been rife among the members of the College, embodied itself in a form so well adapted to direct their energies into the proper channels. The employment of the leisure time of the student in the prosecution of some branch of Natural Science, as a relaxation from the severer labors of the course, is a desirable end that can in no way be so effectually reached as by a voluntary association of this kind, and its beneficial influence upon us is already perceptible.

No sooner, however, had the association commenced its operations, and investigations been entered into in the various departments of science, than the want of an adequate *Library* and *Museum* was strongly felt. Measures were at once adopted for the acquisition of both, and carried out with such energy and success, that the Cabinet is already highly respectable. Numbers of distant friends of the College have generously availed themselves of this opportunity to contribute towards the prosperity of the Institution.

We therefore feel emboldened to urge this subject upon the attention of those who have not yet done any thing for us. We desire, and are determined to use every exertion to get together a cabinet, that will do honor not only to Pennsylvania College, but to the scientific spirit of the whole body of those interested in her prosperity. In this, not only the scientific, but all persons of taste and intelligence, can aid us most effectually. We desire to obtain specimens of the natural productions and curiosities, the fossils and minerals, the plants and flowers, the birds and shells, fishes and reptiles, the insects and the animals of this country, and of all parts of the world. We therefore appeal to our friends, every where, to encourage us in this undertaking, by sending us any of these things which they think will be of interest in such a collection. Donors may be assured that their contributions will be gratefully received, and that a record will be kept of the names of those who aid us in this enterprise. We have determined to erect a Hall in which to arrange and display to advantage the articles which we already possess, and which we are assured that the liberality of our friends and the public generally will hereafter furnish; but we hope that, in the mean time, so much will be done as to show that our labor and zeal for this work have not been superfluous.

Donations may be forwarded to the following gentlemen, who take a lively interest in the enterprise:

Rev. JNO. G. MORRIS, D. D., *Baltimore, Md.*

Rev. W. A. PASSAVANT, *Pittsburg, Pa.*

Rev. CHAS. MARTIN, *New York, N. Y.*

Rev. THEOPH. STORKE, *Philadelphia, Pa.*

Or to the "Curators of the Linnaean Association, *Gettysburg, Pa.*"

# Pennsylvania College, Gettysburg, Pa.

PENNSYLVANIA COLLEGE has now been chartered about fourteen years. During this time its progress has been such as to gratify the most sanguine expectations of its friends. The course of studies is as extensive and substantial as that of any Institution in the Country. The *Preparatory Department* provides for instruction in all the branches of a thorough English, business education, in addition to the elements of the Mathematics and Classical Literature. The *College Course* is arranged in the four classes usual in the Institutions of this country.

The government of the students is as energetic as their circumstances seem to require. They attend at least two recitations a day, Church and Bible Class on the Sabbath, and are visited in their rooms so frequently as to preclude the danger of any great irregularities. It is believed no Institution in the United States has more exemplary young men in connexion with it. They are all required to lodge in the College Edifice, special cases excepted.

The annual expenses are—for board, tuition and room-rent, during the winter session, \$61 87½; for the summer session, \$41 87½. Washing, \$10 00; and Wood, \$3 00. Total expense, \$116 75. Boarding can be obtained in town at \$1 25 per week.

There are two vacations in the year, commencing on the third Thursdays of April and September, each of five weeks continuance.

The summer session commenced on the 22d of May, with the accession of over forty new Students.

## Acknowledgements of Donations to the Cabinet of the Linnæan Association of Pennsylvania College.

1. May, 1845. From *Mr. Yingling*, one large shell, and mineral.
2. *Mr. J. A. Bradshaw*, Morse's Telegraphic alphabet; a stone broken from Andre's dungeon, Fort Putnam, West Point.
3. *Miss Hunt*, Boonsboro', specimen of printing done in the Penn. Institution for the blind.
4. *Rev. A. H. Lochman*, one pair of Indian moccasins.
5. *Miss Voglesong*, number of specimens of minerals and shells.
6. *Mrs. S. Krauth*, Baltimore, shells, &c.
7. *Prof. M. L. Stoeber*, an engraving of the Declaration of Independence.
8. *Mr. J. Brooks*, per *Prof. Baugher*, eight specimens of the Horseshoe-fish, weapons of the Sword-fish, and a box of shells.
9. *Messrs. Miller and Renshaw*, a beautiful specimen of the Grey Squirrel.
10. *Dr. Dobler*, Elizabethtown, Pa. minerals, and a copy of a very ancient Atlas.
11. *Mrs. Ebert*, one ancient Irish coin.
12. *Prof. Hay*, specimens of minerals from Niagara.
13. *Mr. A. H. Aughe*, petrified snake.
14. *Mr. Wm. Gillespie*, one box of articles from the burnt district of Pittsburg.
15. *Mr. H. Rathvon*, of Lancaster, Pa. a silver medal of the University of Berne, worth about \$1 50.
16. *Dr. Robt. B. McCay*, of Northumberland, Pa. two specimens *Voluta Musica*, from the West Indies.
17. *Dr. D. T. Trite*, of Sunbury, Pa. and *Messrs. Charles Brunner*, and *Wm. J. Martin*, of the same place, one box of minerals.
18. *Mrs. All*, one Sand-hill Crane. The above Nos. 16, 17, and 18, per *Mr. Geo. W. Martin*.

*Vacation.*—Our friends will excuse the late appearance of the present No. of the Journal, in view of the fact, that the acting editor thought himself entitled to a vacation in common with the other members of Pa. College. At other times we shall endeavor to be as punctual as our cotemporaries.

VOLUME 1.]

NUMBER 9.

THE  
**LITERARY RECORD AND JOURNAL**

Of the Linnaean Association of Pennsylvania College.

JULY, 1845.



CONDUCTED  
By a Committee of the Association.

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1½ sheet, periodical—Postage, 2½ cents, to any distance within the Union.

NEINSTEDT, PRINTER, GETTYSBURG.



THE LITERARY

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OF THE LINNÆAN ASSOCIATION OF PENNSYLVANIA COLLEGE.

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VOL. I.

JULY, 1845.

No. 9.

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NUGÆ ETHNOLOGICAE, NO. I.

BY PROF. H. S. PATTERSON, M. D. OF PHILADELPHIA, PA.

It is my desire to throw out a few occasional thoughts on the intensely interesting subject of the Natural History of man, hoping that they may prove acceptable to the readers of this Journal, and perhaps excite some active mind to a fuller investigation of the topics referred to. Ethnography and the associated subjects of inquiry are among the broadest and most attractive fields now open to the student. Before Blumenbach there was no science of mankind, considered in its diversities of form, feature, and color, and little has been done since his time, until of late, when a host of able minds have devoted themselves to the subject with an energy and zeal which promise speedy and ample results. Among these, I would instance Morton and Prichard. Of our eminent fellow-citizen, I need say little. He has built himself already a monument *perennius ære*, and is pursuing his career with an industry and ability that cannot fail of important consequences. Dr. Prichard, be his faults what they may, has displayed an amount of erudition seldom equalled. If not always unprejudiced and clear in his views, he yet deserves all praise for the labor he has bestowed in accumulating the materials from which alone correct generalizations can be attained, as well as from the hearty candor with which he abandons a hypothesis, however favorite, when it is shown to be erroneous. The works of these writers, and many others, have given to ethnological studies a prominence they never before enjoyed. Facilities for the study have also increased in proportion to the accuracy of our knowledge concerning the inhabitants of remote portions of the globe. The investigation of the monumental remains of ancient peoples has thrown much light on the past history of the race, and comparative philology has come in to complete the round of studies which are requisite to a perfect Ethnology. There can rarely be found a mind competent to master so immense a sphere of inquir-

ry, yet the simultaneous effort of many minds is fast bringing us toward an accurate science.

Yet there are obstacles in the way. Unfortunately, no subject involves so many ulterior considerations of a momentous and exciting character. It is difficult to approach it with a mind not pre-occupied by fixed opinions and even stubborn prejudices. I have felt this myself, and have seen it in others. Our supercilious contempt for those we deem inferior to us, rouses us to resistance, when our absolute parity is asserted. The inherent disposition to find a reason to gloss over with a color of right the wrong we daily practice, may also influence us. On the other hand, the denial of the unity of the great family of man strikes a blow, at first sight so serious, at our cherished religious and social principles, that we can scarcely come with calmness to its consideration. It appears little less than profanation, that, when our hearts are opened toward our great brotherhood, and Reason (*Vernunft*) combines with revelation to proclaim the truth of the sentiment, the mere physical philosopher, based on his narrow islet of the Understanding (*Verstand*) should hold out to us his dry bone or shred of *rete mucosum*, and ask us, on their authority, to negate the evidence we believe to be the highest. Yet we should recollect, that, if his islet is narrow, it stands firm amidst an ocean of illusion, with its foundation far down in the central depth. Nature cannot lie. It is "the art of God," and a mode of operation of the Spirit of Truth. Our proper inquiry is first, is the alleged fact really fact, and if so, are the deductions drawn from it, legitimate? In order to the first inquiry, we must have free and unoccupied minds, and I believe, that, if we bring them to this subject, we will find nothing in the results of ethnological investigations to militate with the Christian theory of the parity and fraternity of the whole race. I could not pretend to discuss so ample a topic in a few disjointed notices, even had I the ability to do it. My object is merely to throw out a few suggestions from time to time, none of which will probably have the charm of novelty, except to those whose reading on the subject has been limited.

One of the primary doctrines taught us is the origin of all men from a single pair, whose seat was somewhere in Central or North-Western Asia. The question arises, does the Bible teach beyond dispute, this doctrine? There are those who doubt, and even those who deny it. Among the former I may mention Mr. Lawrence, (*Nat. Hist. of Man*), and among the latter, Bory de St. Vincent, who denies that the Negroes and Australians are a part of the "*race Adamique*." Voltaire and his school, who also take the latter view, are not to be regarded as men of science, and have therefore, no authority. Among the earliest specula-

tors on this point, was Isaac Peyrere, librarian to the Prince of Conté, who published, near the middle of the last century, a book which was publicly burned by authority of the Sarbonne. He contended that there are in Genesis two distinct creations of human beings described. The first upon the sixth day (i, 27. 28.) and the second subsequently in Eden, forgetting entirely, that in the passage immediately preceding the account of the creation of Adam, the reason is given, "that there was not *a man* to till the ground." In general the writers who take this view, assert that the word Adam is intended to be understood as a generic appellation, and that the whole account is rather mythical than a literal history. Every reader of Genesis must have noticed, that there runs through the early part of it, in particular, a duplicate account of most transactions. Whether the theory of its formation by the collocation of ancient fragmentary documents is true or not, this fact is apparent. The account in that, which the critics denominate the Elohist document, is found in Gen. i, 27. 28,—that in the Jehovistic in ii, 7. 21. 22. The word which is given as a proper name (Adam) in our version of the latter, is translated *man* in the former, and is proved to mean the whole human family, or Mankind, by the succeeding declaration "male and female created he them." Cahen, a learned Israelite, who has recently published a new translation of the Bible in Paris, remarks on the former passage—"Adam, l'espèce humaine, singulier collectif." In commenting on the 19th verse of the 2d ch. where our version first uses the name Adam he charges the Septuagint, whom we have followed, with changing a collective into a proper name. Fabre-d' Olivet, in his great work, "*La Langue Hébraïque Restituée*," writes thus on the word Adam: "I pray those who read me without partiality to remark, that Moses does not fall here into the modern error which has made man a particular genus in the animal kingdom; but, after having finished all he wished to say on the elementary kingdom, the vegetable kingdom, and the animal kingdom, he passes on to a distinct and more elevated kingdom which he names ADAM. \* \* \* This name does not signify simply "homo," *a man*: it characterizes, as the Samaritan version properly has it rendered, *the universal*, what we understand by *the human species*, and what we might better express by *the hominal kingdom*; that is, collective man, MAN formed abstractedly by the assemblage of all men. This is the proper sense of the word Adam." He adopts this signification throughout, and regards the entire Mosaic cosmogony as a splendid myth, shadowing forth spiritual truth under material forms. Of his philological erudition there can be no doubt. Dr. Lamb, of Corpus Christi College, Cambridge, who has taken a somewhat similar view, and regards the early part of Genesis

as a transcript from the sculptured records of primeval hieroglyphical monuments, does not agree with Fabre- d' Olivet, in considering Adam generic, but limits the creation to a single pair. This, as is well known, is the opinion of theologians in general. More light is wanted on the subject, and I can conceive of no more useful task of a profound linguist than the investigation of this difficulty.

If the view here indicated be correct, we are to understand the Scriptures as teaching nothing more than that mankind was formed from the dust of the earth, by an effort of the Divine Will, at a particular point in the creative series, and that point the last, and therefore, the highest, because the series is evidently progressive in importance and excellence. The subject is therefore, an open one to the naturalist, and remains to be determined by proper physical and psychological researches. These cannot, of course, prove the origin from a single pair; neither will history help us here. The remarks of Adelung, quoted by Mr. Lawrence, sufficiently establish this point. The late discoveries in Egyptian archæology, only show us the existence of the present diversities at a date prior to all profane history hitherto known. But ethnographical science can establish, if I am not mistaken, a point of equal importance, because involving the same inferences. It is the *specific identity* of all the families of men, and the separation of man from the rest of the animated creation by a wide and impassable chasm. I have seen as yet, no evidence of diversity which any unprejudiced naturalist would consider sufficient to establish a difference of species among the inferior animals. As to the cause of the diversities which do exist, I believe, that there are abundant data to prove this position—*that the ordinary physical forces daily produce differences of form and color in the animated creation under our eyes, infinitely greater than any which are found among the various tribes of men.* Admit this, and I assert again, that we have no right to alledge more or greater causes than suffice for the production of a given effect, and that it is unphilosophical to presume an original difference or a miraculous transformation, when the ordinary forces of matter are amply sufficient to account for the phenomena in question. We can, therefore, establish the unity of the species even if we give up the Scriptural authority for it.

It will be seen that in the above remarks, I have not resorted to the flood to disprove any conclusions that might be derived from a supposed original creation of the varieties. I have not done so, because it is abundantly evident that the family of Noah includes only the three great branches of the Caucasian variety, and that the Scripture account is confined to them. The gradual narrowing down of the Bible narra-

tion, first from the race in Adam to the Caucasian variety in Noah, then the separation of Shem from Ham and Japhet, of Abraham from Lot, of Isaac from Ishmael, and finally of Jacob from Esau, shows that all the anterior account was intended by the writer of the Pentateuch as simply introductory to the great object of the work,—the history of the children of Israel. It is therefore, marked with a brevity and conciseness which seem to Dr. Lamb. to prove its hieroglyphical origin. He supposes that the writer of Genesis, would of course preserve as much as possible of these records, whose antiquity gave them the highest authority. Be this as it may, I think we must agree with Dr. Pye Smith, in the observation, that “it never entered into the purpose of revelation to teach men geographical facts, or any other kinds of physical knowledge.” The writer gives merely a history of the dealings of God with his chosen people, prefaced by a cosmogony and a genealogy of their great progenitor. In these we have the revelation of religious truths of primary importance. We have no right to look for more. Our duty is to receive thankfully that which is vouchsafed us. It did not enter into the scope of the work to teach ethnology any more than astronomy or anatomy. It is a subject within the reach of the powers given us, and we should exercise them upon it with honesty and humility, in the confident assurance that no two truths ever were at variance with each other, but harmonize as emanations from the One Source.

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#### BIOGRAPHY OF LINNAEUS.

A short sketch of the life of the distinguished naturalist, from whom the Journal derives its name, will no doubt be received with favor by its patrons. The truth is, very little is known of Linnaeus by the great mass of readers. A fact concerning him is here and there brought to light, but seldom does a full history of his life and character fall into the hands of the general reader. This is to be regretted. We desire not merely to hear of great men and become acquainted with the important discoveries which they have made; we want to see them living and acting before us, to hear them speak, and trace for ourselves the linaments of their characters as well as their faces.

Charles Linnaeus was born on the 3d of May, 1707, in the little village of Rashult, in Smaland, a province in that part of Sweden adjacent to Denmark. His father was descended from a race of peasants, some of whom had relinquished their occupations for literary pursuits, and according to the Swedish custom, had changed his name for one suggested by some external circumstance. A flourishing linden or lime-tree on

the farm on which he was born, gave origin to the name Lindelius or Tiliander (lime-tree man,) which was afterwards changed to Linnaeus. The mother of the naturalist, it is said, was a remarkably fine woman, furnishing another fact to confirm the opinion, that the mothers of distinguished men are gifted women.

His father, who was a poor clergyman, was obliged to eke out a scanty income, by cultivating a garden. This was the foundation of the son's celebrity. Here he acquired that love of flowers, and of nature in general, which was followed by such important results. He was the constant companion of his father whilst in the garden, and had set apart for himself a little spot of ground in which he labored most industriously, and soon became acquainted with all his father's plants, and those indigenous to the neighborhood, which he transplanted into his own territory. His labors were not confined to flowers, but extended to the pursuit of wasps and wild bees, which he captured and attempted to colonize at home, much to the annoyance of the domestic insects. His parents, anxious that he should enter the university, sent him, when ten years old, to the gymnasium of Uexio, for the purpose of beginning his studies systematically. Here his advantages for the study of his favorite subjects were greatly increased. But, alas! for Greek and Latin, he neglected them so much, that both students and professors pronounced him an incorrigible dunce.

At seventeen Linnaeus was sent home with most unfavorable testimonials. His parents believing, that his present pursuits would never yield him a livelihood, determined to apprentice him to a cobbler. Dr. Rothmann, of Uexio, attracted by his extensive knowledge of botany, saved him from this sad alternative, and made such liberal offers for his present support that his father permitted him to study botany and physic. The first year of his academic career was spent at Lund, where he was relieved from the pinching hand of poverty by the kindness of Prof. Stobaenus. Whilst busily engaged in extending his botanical excursions, and increasing his herbal, he almost lost his life by the bite of a venomous worm, to which he afterwards gave the name of *Furia infernalis*.

He was induced to repair to Upsal, in the hope of enjoying the instructions of Dr. Olaus Celsius, first professor of divinity, and restorer of natural history, in Sweden. Much to his disappointment the professor had gone to Stockholm, and he was once more thrown entirely on his own resources. One year he spent in hard study in which all his money was expended. There was no prospect of relief from home, and his destitution increasing, he was glad to receive the cast-off clothes

of his fellow students. His extremity may be inferred from the fact that he patched a pair of shoes given him by an acquaintance, with pieces of card stiched together with fibres of bark. Oh ye lovers of learning! receive from the trials of Linnaeus a lesson of perseverance which will teach you not to despond in the darkest hour of adversity. The darkest hour is said to be before day. In the midst of these trials Celsius returned, and pleased with the young botanist's knowledge of the plants in the university garden, admitted him to his house and table, and gave him free access to his library. The rapid progress of our young student in such favorable circumstances may be inferred from the fact, that in two years he was thought qualified to deliver occasional lectures from the botanic chair, in the place of Prof. Rudbeck.

The members of the Royal Academy of Science at Upsal, anxious for the improvement of the natural history of Sweden, at the suggestion of Celsius and Rudbeck, appointed Linnaeus to make the tour to Lapland. For this he was eminently qualified both by a vigorous constitution, and profound knowledge as a naturalist. Thirty-one dollars was the sum furnished for his outfit, on which he traveled six months, and in addition, economized sufficiently to purchase a fur dress out of it. His equipments are given as follows: "A light coat of linsey-woolsey, with a red shalloon lining, shag collar and cuffs; leather breeches; a wig; a green leather cap, and half boots; a hanger at his side, a small fowling-piece, and an octangular stick graduated for measuring; a leather bag containing one shirt, two shirtees, two pairs false-sleeves, an ink-stand, a pen case, a spy glass, a microscope, a gauze cap as a protection from the gnats, a comb, paper stiched together to hold his plants, his journal, and other manuscripts."

Without attempting to follow our traveler through a region of country, in great part waste and desert, it may be sufficient to say, as illustrating the cheerfulness and patience of Linnaeus, that parts of his journey were performed on a meagre stumbling horse, with an unstuffed saddle, and a bit of rope for a bridle. He exposed his life in visiting the remarkable caves on Utskula. A stranger to the manners, and ignorant of the language of the people, he committed himself alone, to their hospitality.

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 FRAGMENTS ON THE BEAUTIFUL.

\*                     \*                     \*                     \*

The beauty of graceful motion arises from the ease, and the absence of restraint with which it is connected by the mind. It charms us into

a faint dream of freedom, there is a leaping joy in the bosom. We catch the grace, the ease, the swiftness, and are for the time companions of the springing antelope, twirling her tiny limbs and careering over the plain like a frisking vapor driven wild before the chasing wind.

There is a glory around the setting sun. The quivering lances of red light are darted against the cloud-shielded breast of Heaven.—The deep glow kindling the air-woven vapors, reflected from hill-side and house-top, rock and tree, mirrored in every still pool, and flashing in every dimpled stream—lights up all things with unconsuming fire, and makes a universe of flame.

“The glorious sun  
Stays in his course, and plays the Alchemist;  
Turning with splendor of his precious eye,  
The meagre, cloddy earth to glittering gold.” \*

But it is the spirit in its high and calm musings, whilst the heart beats tranquilly as in the bosom of the sinless child, it is the soul dwelling in tender melancholy on thoughts of life's evening repose, the rest of those who have passed earth's horizon, to shine in another firmament where they shall set no more—it is the light of the setting sun playing on a golden link of that chain which binds us as immortals to the blessed God whose word sent him forth to run his race—it is this—it is these that give it beauty.

This great principle which we call the law of Association, constitutes the grand link, in the mind, of objects which have no absolute connection. The mind having had cognizance of one object at the same time and place with another, whenever it subsequently beholds but one of them—is reminded of its fellow. From the difference of the circumstances under which the mental grouping is made arise those peculiarities, and sometimes anomalies of feeling, for which without reflection we might oftentimes be unable to account. You and I may be looking at the same object—you may be moved deeply—I may view it with indifference, or smile at a sensitiveness which I do not comprehend. I cannot feel with you, because with that object my mind has not the association which gives to you its beauty or its power. The Switzer may languish with death-like longings when he hears the Ranz des Vaches, an air by no means remarkable for its pathos, because he has heard it echoed from the hills on whose side his father's cot was built, when the voice of a mother still calls him back to the home of his childhood. Wherever this law of mental association acts, a sense of the beautiful may be excited. Objects ordinarily absolutely disgusting, by

\* King John, Act I, Sec. 1.

it are rendered pleasing.—“In love,” says Homer, “oftentimes the things that are not beautiful, seem beautiful.” “How beautiful on the mountain tops,” says the prophet, “are the feet of them that bring glad tidings of good things.” He speaks of the Herald who brings the glad news of deliverance. The sandelled feet soiled with the dust of travel, and repulsive, became beautiful when the mind of the prophet connected them with Him whose journey they sped, bringing rapture to the wasted children of Israel.

The moment any object, whatever may have been its charms, has an association of a repulsive character connected with it, it loses all its beauty. If the lovely Paris sat upon the Judge’s bench, the man whom he condemned to be hung, would think him a monster of ugliness. So far will the mind carry its action under this law, that it will regard as repulsive what has innocently or involuntarily become associated with what we dislike. So the immortal poet, in the play of King John, when the Earl of Salisbury bids the lady Constance repair to the marriage of the Dauphin Lewis to Blanch of Castile, a union which blasts all her own prospects with those of her son, true to nature, makes her passionately cry out to the involuntary messenger of evil :

“Fellow begone ! I cannot brook thy sight ;  
This news hath made thee a most ugly man.” \*

†

#### THE ORIGIN OF THE FINE ARTS.

From the German of Kugler’s *Handbuch der Kunstgeschichte*.

The origin of Art is to be sought in man’s necessity of connecting his thoughts with some fixed place, and giving this memorial place, this monument, a form that shall be an expression of the thought. From this commencement is developed, by a gradual process, the whole richness and the whole significancy of art, even up to its latest, most independent and most sportive creations. For the idea of art necessarily involves the presentation of the life of the spirit in a corporeal form ; and it is everywhere its highest aim to present in the phenomena of the material world the spiritual import, in the transitory the permanent, and in the temporal the eternal. It is, therefore, an error, when the origin of art is deduced from the rude, sensual necessity which leads the brute as well as the man to a formative effort, or from the mere principle of invitation. However wonderful the works may be, which proceed from these two impulses, and especially from the first, they have in themselves nothing in common with art, in the higher and proper

\* King John, Act 3, Sc. 1.

meaning of this word ; and it is only when an already existing taste for art unites itself with these, that their performances are able to attain the form of art.

In the period of infancy generally man needs only a few simple signs for the expression of his ideas, and for the most part, in the early stages of human culture the monument is nothing more than the simple designation of a particular and selected spot. Of such monuments of the simplest form, the earliest narratives of Scripture inform us. In the place where Jacob in his dream saw the ladder that reached to heaven, and received Jehovah's blessing, he set up a stone and consecrated it to the memory of the revelation which he had received ; so also, a meal, and a heap of stones became the holy witness of the covenant which Jacob made with Laban. A smooth stone forms, in those early periods, the altar to which the Deity descends to receive the gifts and prayers of mortals ; a hillock of earth rises above the bones of the sleeping hero, who has raised himself up to the ranks of the immortals, and his exploits are celebrated by sacrifices at the place of his earthly repose.

To be sure, the shapeless stone, the rude hillock, are still in themselves but arbitrary signs ; nothing yet appears to stand forth in them by which they can really be made the bearers of the idea which is to speak itself forth in them. But this is the proper nature of a work of art, that it is not a mere unmeaning sign for the idea, but, much rather, the body united with which and through which it first makes its appearance. Equally does it lie in the nature of the case, that—as the human race was further developed, and its ideas gradually gained a more fixed form—so also, those rude monuments received a definite stamp which necessarily became the actual and immediate expression, though, at first, only of the simplest thought. Moreover, even before this sign of thought could be developed in a peculiar or definite manner by the active hand of man, they were already adapted in certain aspects to serve as the embodiment of the thought. By the selection of differently formed stones, as they were supplied by nature, (either by a loose mass, or from the quarry,) by the peculiar mode of their erection, or of their arrangement, the general impressions of elevation, of massiveness, or even of harmony could be excited.

Yet it is difficult to re-ascend to that early youth of human history. We do not know in what land we are to seek the first, simplest monuments erected by mankind ; we can only too well surmise, that the new generations that took the place of the old, did not always spare and protect the works left behind them by their predecessors ; nor dare we congratulate ourselves upon possessing a complete knowledge of all

that the surface of the earth still retains. However, it is not our object to connect a history of the human race with the monuments of art; it is merely our design to write the history of art itself according to the different grades of its peculiar development. But as we by no means perceive in general history a progress of culture at all times alike, inasmuch as alongside of people that already stand upon a higher elevation, we likewise see those who have not yet raised themselves from a lower, yea, even from the lowest degree of culture, it will be indifferent to our object to what period of history those monuments belong, in which we perceive the first dawnings of art. It is enough for us, to seek out such monuments, no matter where, and in them to examine what is the condition of man's artistic activity in its first manifestations.

In Asia, which is usually designated as the cradle of the human race, we are acquainted with but few monuments that carry us back to the origin of the arts, and these remains are, moreover, dismembered, and of no particular importance. On the contrary, we find a great number of such works in northern Europe. They belong to the original inhabitants of these countries, the Celtic tribes in France, (especially in the basin of the Loire, and in Bretagne,) and in the British Isles, to the Germanic tribes in Germany (especially northern Germany,) and in the Scandinavian countries, and perhaps also to the Slavic races, in the northern parts of modern Germany, where the Slavic and Germanic elements came in contact. We have nothing whereby we can positively determine the period when these monuments were erected; in general we must consider them as cotemporary with the youth of these people, that is, as nearly corresponding with the earlier times of the Roman state with whose history their's is in many ways interwoven; it is also possible, that in some countries those monuments continued to be erected until the middle ages, so late as which Christianity was but partially introduced. They do not, therefore, belong to the most remote periods of human history, but bear throughout the stamp of a simple and original state of culture; and even where the more refined civilization of the Romans was mingled with it,—as was especially the case in Gaul, after the subjugation of that country by the Romans,—there the elements of the more highly refined people, show themselves so predominant in the monuments produced by this commingling, especially in their artistic form, that the originality of the works in question appears but the more clearly from the contrast. In other respects, although the field covered by these monuments is so extensive, no essential difference appears to prevail in the principles according to which they were erected; at all events, the particular national characteristics of these people be-

long rather to the field of antiquities than to that of art. It is, however, to be observed, that the most magnificent development of this simplest artistic energy is found among the Celtic nations. \* \* \* \*

From the nature of the case, in monuments like these which bear such decided marks of the simplest state of culture, in which the most general laws of artistic arrangement, but none of the methods of a highly polished expression yet appear, in these the collective power of the arts must be contained. We cannot yet properly speak of a separation of the two grand divisions of art considered with a reference to space, viz. architecture and sculpture. On the contrary, I believe that the germ of both lies hidden in them, and I do not think the hypothesis too bold, that we can recognize in them both a plastic and an architectural tendency. When, for example, slender stones are erected as monuments of distinguished persons, it does not seem inappropriate to the simple ideas and lively imagination of the infancy of civilization, to consider such stones as images of the persons commemorated. We cannot, therefore, be surprised that we find in connection with these works nothing of what we call statuary or even of ornaments regulated by the rules of art, and that the remains found in those colossal tombs, such as urns and other utensils, likewise exhibit nothing more than the greatest simplicity of form and workmanship.

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#### THE POWER OF FASCINATION ASCRIBED TO SNAKES.

Cuvier in his "Regne Animal," (vol. ii, pp. 66—67, of M'Murtrie's Trans.) remarks, that "it has long been supposed, that the Rattlesnake, (*Crotalus*, Lin.) possesses the faculty of rendering its prey powerless by its breath, or even of *charming* them, as it is called, by which they are compelled to leap into its mouth; this, however, is not so, the reptile seizing its prey while under the agitation and terror, produced by its appearance." His judgment appears to be founded upon Barton's "Memoir upon the power of fascination," Phil. 1796, which I have not seen, but I have long been familiar with the following story, which the newspaper, in which I find it last, gives as told by a Mr. Willard. Who this gentleman was, or to what credit he is entitled, I cannot now say, but the impression rests upon my mind, that I have seen him very respectably endorsed.

"When I was a boy about thirteen years old," says he, "my father sent me into the field to mow some briars. I had not been long employed when I discovered a large rattlesnake, and looked round for something to kill him; but not readily discovering a weapon, my curiosity led me

to view him. He lay coiled up, with his tail erect, and making the usual singing noise with his rattles; I had viewed him but a short time, when the most vivid and lively colors imagination can paint, and far beyond the powers of the pencil to imitate, among which yellow was the most predominant, and the whole drawn into a bewitching variety of gay and pleasing forms, were presented to my eyes: at the same time my ears were enchanted with the most rapturous strains of music, wild, lively, complicated and harmonious, in the highest degree melodious, captivating and enchanting, far beyond any thing I ever heard before or since, and indeed far exceeding what my imagination in any other situation could have conceived. I felt myself irresistibly drawn toward the hated reptile; and as I had been often used to seeing and killing rattlesnakes, and my senses were so absorbed by the gay vision and rapturous music, I was not for some time apprehensive of much danger; but suddenly recollecting what I had heard the Indians relate, (but what I never before believed,) of the fascinating power of these serpents, I turned with horror from the dangerous scene; but I was unable to extricate myself. All the exertions I could make with my whole strength were hardly sufficient to carry me from the scene of horrid yet pleasing enchantment; and while I forcibly dragged off my body, my head seemed to be irresistibly drawn to the enchanter by an invisible power. And I fully believe, that in a few moments longer it would have been wholly out of my power to make an exertion sufficient to get away."

This story is not inconsistent with Cuvier's idea, that terror is the cause of the animal's rushing into the jaws of the serpent, though it is somewhat remarkable that a boy who had been in the habit of killing these reptiles, should be thus overpowered. But as he acknowledges that he was familiar with the Indians' stories of the powers of the Rattlesnake, we can easily conceive that they may have produced such an effect upon his imagination. I have known a youth of 16 or 17 years of age to faint from reading the account of a disease of which he thought he had the symptoms.

But a fact of this kind fell under my own observation. When I was a boy of about fifteen, I went with several young companions to a wood about two miles distant from Hagerstown, Md. for the purpose of gathering the wild haw, with which the limestone ridges in that region are frequently overgrown. The berries likewise attracted great numbers of birds, and the clefts among the rocks offered a safe retreat to reptiles. Coming to an open space in the wood we were surprised to see a quail or partridge, as it is there called, moving about in a very singular manner. We at first thought that it was performing that wonderful

trick, by which, birds, pretending to be lame, seek to lure the intruder from their nest or from their young. But we were soon satisfied that this was an entirely different case. The poor bird did not pretend to be lame, but, on the contrary, was unusually active upon its legs. Its movements, however, were very peculiar. It went in a zig-zag line first to one side and then to the other, occasionally hopping forward, and always advancing. At the same time it continued to utter a chirp of great distress. We soon perceived that its eyes were steadily fixed upon a Copper-head snake 3 or 4 yards distant. The snake did not appear to be disturbed by our intrusion, nor did it seem particularly intent upon its prey, though its head was elevated from the ground about as much as in its ordinary movements. I think there was also some motion of its tail. One of our number went forward and captured the bird, which was apparently rather relieved by getting into human hands, and soon ceased to tremble, as it had evidently been doing when facing its savage enemy. The snake was soon killed as it neither made any resistance, nor attempted to escape, though it appeared sufficiently vigorous, and was about two feet long. Our sympathies were considerably excited in favor of the bird, which we took home with us, but it was finally sacrificed to the health of an old gentleman who was just recovering from an attack of sickness, and required some such delicate morsel to provoke his appetite!

I cannot say that this bird was not under the influence of terror, but it is remarkable that whilst in other cases, this as well as other animals, flees from its enemies, it should here face its foe in so rash a manner. Had not the bird appeared so manifestly alarmed, I should be disposed to think that it was meditating a battle with its antagonist. We know this class of birds to be possessed of no small degree of courage. Birds are in the habit of devouring insects and worms, (from which a snake is not so very different in appearance,) and we know that the common domestic hen will attack and kill a snake of very considerable size. I merely throw out this suggestion for future inquirers, my own impression being, that at the time I saw it the bird was in great dread of its adversary.

I therefore agree with the great naturalist, that neither the breath, nor enchantments of the serpent overpower its prey, but that, either coming upon it stealthily, or confusing it by its sudden and formidable appearance, it succeeds by means similar to those employed by other rapacious animals.

W. M. R.

*Pennsylvania College. June 26, 1845.*

## ARTIFICIAL INCUBATION.

There is an old proverb that warns us, "not to count our chickens before they are hatched," but modern science has gone very far towards changing contingency to certainty. Perhaps we ought to leave away that boastful word, 'modern,' for we are told that the Egyptians have from time immemorial, practiced and preserved the art of hatching chickens in brick ovens, which they term *mamals*. But the Egyptian process is a very imperfect one, and it is only recently that the application of correct principles of chemistry and physiology to the construction of suitable machinery, and to the proper development and care of birds, particularly domestic fowls, has enabled the skillful poulterer to increase his production to almost any amount, or, at least, determine how many dozen of chickens he will bring forth from the egg.

It has long been known that about  $104^{\circ}$  of heat is the temperature to which eggs are raised by the incubation of the common domestic fowl. From this it was easy to infer, that all that was necessary to the production of the chicken from the egg, was the uninterrupted application of about that amount of heat for the proper time. Reaumer endeavored to secure this by the fermentation of manure in suitable casks or ovens, but his success was by no means great. A much surer method is that of applying warm water to the vessel in which the eggs that are to be hatched are placed. This is done in the "Artificial Hen," and the "Calefactor" of Lemaire, and some other contrivances which are described in the "*Maison Rustique*," a French agricultural paper, an article in which, upon this subject, is translated for the "*Boston Chronicle*," from which we gather the following facts :

The best apparatus for incubation upon a large scale is that of Sorel. This is formed by a large, cylindrical, copper boiler, perforated through the middle to give passage to the chimney, which rises above it, and by which escape, not through the upper part which is closed, but through holes made in the circumference, the gaseous products of the combustion of a lamp or small fire of charcoal placed on the hearth. The boiler is enlarged both at its upper and lower part, to form in both cases hollow discs in which the hot water diffuses itself. These two discs also communicate with each other by a certain number of columns, or vertical tubes, placed at intervals around the apparatus. These columns descend quite to the platform of the fireplace, which is itself a double bottom, in which the water can diffuse itself. The upper surface of the boiler is in the shape of a cover, which can be raised at pleasure, either to fill it with water or to adjust the float. This float is a vessel inverted, placed in the centre of the boiler, and surmounted with a cylinder

which encloses the chimney, up and down which it can move freely ; it rises thus very nearly to its extremity.

To preserve the moisture necessary for the health and development of the chicks in the eggs, the boiler is surrounded by a double envelope of copper, in the interval of which is poured a little water, which by its slow evaporation, gives the air the quantity of vapor necessary to its temperature.

The upper surface of the boiler can equally receive eggs placed upon cotton during the incubation ; but when the chickens are hatched, we take off the wadding and cover it with an oil-cloth, or make a cage of it, where for a day we keep the young animals before feeding them.

Under the platform of the fire is a coop, furnished with a sheep skin, under which the chickens are warmly lodged till they can live in the open air.

The whole apparatus, which is square, octagonal, or better round, is enclosed in a wooden case, in which there are a certain number of doors or slides, to place and turn the eggs, and take out the chickens and perform all necessary operations. A certain number of very small tubes, at different heights, serve to supply the air necessary for the combustion as well as to ventilate the interior.—Finally, some rather large openings, with glass puttied in, enable us to see what is going on in the interior of the apparatus, without the necessity of opening the sliding doors each time.

Several other modes of hatching chickens have also been tried. Thus advantage has been taken of the waste heat of the ovens of bakers and pastry cooks, furnaces, steamboilers, and the like, where fire is constantly employed, and which can be made to furnish a constant, uniform, and very economical heat. This has also been done in simple chambers, warmed with a portable furnace, and furnished with hooks, on which the baskets of eggs are suspended, nearer or further from the fire, according to the temperature. These chambers, however, need constant attention, to be suitably regulated.

Finally, M. D'Arcet, has proposed to take advantage of the heat of warm springs to hatch the eggs of hens and pigeons. This ingenious idea has already been put in practice profitably at Vicky, in 1825, and at Chaudes Aignes, in 1827.

The "Maison Rustique" gives the following rules in regard to incubation, and the management of the chickens :

1. The apparatus designed for hatching should be in a still, retired place, sheltered from the wind and from sudden changes of temperature, and especially from noise and frequent jarrings, which are prejudicial to the perfect development of the embryos.

When chickens are to be hatched to supply a regular consumption, it will be best not to furnish the apparatus the first day with more than the eggs necessary to yield a day's supply, and to add each day an equal quantity during the first twenty days, and then to replace with eggs the chickens hatched, in order to obtain the same number of chickens daily, and to have the business regular through the year.

We choose the freshest eggs, and reject all those which are more than fifteen or twenty days old. Eggs grow stale sooner in summer than in winter. We prefer the largest, because they give the largest and most vigorous chickens. Those which have two yolks should be rejected, as well as those which have none, or which present other similar peculiarities. Every egg which, seen by holding it up to the light, has a very large void space, which can be rendered apparent by shaking, is already old, and is not proper for incubation. There is no appreciable sign to show whether eggs have been fecundated or not; the heat of incubation, which gives to the transparent and clear matters contained in the fruitful eggs a turbid and opaque aspect, after a little time enables us to discover them. An egg not fecundated remains transparent after several days of incubation, and sometimes during the whole period, without manifesting any appreciable symptoms of putrefaction.

2. *Management of the incubation.* The eggs having been selected, the day of the month is to be inscribed on the little end of each, and they are to be arranged in the hatcher with the precautions already mentioned. The eggs being placed, the vents and issues are to be closed for a certain time to let the temperature remount, which the introduction of the eggs and the opening of the apparatus have lowered, and after this the thermometers are to be consulted to regulate it and maintain it at the proper pitch.

The eggs once introduced, there are four circumstances to which we must have regard, in managing the incubation:—The temperature of the apparatus, the evaporation of a portion of the liquid parts of the egg, the respiration of the chickens, and their normal development.

As to temperature, incubation can take place and succeed from 86° Fahrenheit to 113°; but the most suitable temperature, that which gives the greatest number and the most healthy and well organized chickens, is that of 102° or 104° during the whole period of incubation. Physiologists have indeed remarked that a temperature which is not suitable, or which presents frequent variations, must either develop too rapidly, or arrest in its course the development of the sanguino-respiratory system, and that the chicken dies of atrophy in the first case, or of asphyxia in the second; or if not, presents strange disproportions in the differ-

ent parts of its body. Practice, in fine, will promptly teach the best mode of operating.

It is necessary, as far as possible, to maintain in the apparatus an atmosphere impregnated with a medium quantity of vapor, and that which is due to the temperature, by keeping vessels filled with water within the hatchers, and especially the stoves.

According to the observations of several modern philosophers, at the end of fifteen or twenty hours of incubation, and thenceforward to the end of the operation, the chicken *respires*, and from the 30th hour it possesses the organs which it is to keep in its adult state. The respiration takes place by means of the air which is transmitted through the shell, and comes in contact with the vascular membranes of the animal. By obstructing, suspending or vitiating this respiration, the growth of the chicken is checked, or the different parts of its body are developed in an unequal manner. Hence it is evident that it is necessary to surround the eggs with a pure atmosphere, which must be frequently renewed, if we would have healthy chickens, or would not see them perish in the egg.

Oviparous animals during incubation, always turn their eggs regularly, drawing those at the circumference towards the centre, and the reverse. This practice should be imitated, and each day the eggs should be turned one-half or one quarter of a revolution, and their places should be changed, that is to say, those which are in the cooler parts should be put in the warmer parts of the instrument, and the reverse. By this manœuvre the respiration of the chicken, which is accomplished at all parts of the shell, takes place in a more perfect manner, and the nutrition being effected uniformly in all parts of the embryo, we have more vigorous and better formed chickens.

Most of the instruments we have described having regulators of the fire, one or more visits in the twenty-four hours are sufficient, especially in the first stages of incubation. But more attention is required when there are sudden changes in the temperature of the atmosphere, or where, from any cause, we have occasion to change or modify the operation of the heating apparatus, or finally, on the days which precede the hatching, and when it takes place.

3. *The Hatching.* The medium period in which chickens hatch is the twenty-first day of the incubation; this term, however, according to the observations of naturalists, may vary considerably, from causes which are mostly unknown, as will be seen from the following table of the extreme and mean terms of the incubation of domestic birds:

<i>Domestic birds.</i>	<i>Shortest term.</i>	<i>Mean term.</i>	<i>Longest term.</i>
Turkeys sitting upon the eggs of	Hens.....17.....	24.....	33
	Ducks.....24.....	27.....	30
Hens sitting upon the eggs of	Turkeys.....24.....	26.....	30
	Ducks.....26.....	30.....	34
Ducks.....	Hens.....19.....	21.....	24
Geese.....	.....28.....	30.....	32
Pigeons.....	.....27.....	30.....	33
	.....16.....	18.....	20

The chickens commonly come forth by their own strength, but when they remain in the shell twenty-four hours more after it begins to appear fractured, it is a sign that they need external aid to disengage them from it. The chicken may be too weak to finish the work which remains to be done, and a great service is rendered it by breaking the shell around the whole circumference, from the place where the fracture has commenced, by striking gently on it with some hard substance. After this is done the efforts of the chickens suffice to separate the two parts of the shell.

Sometimes the introduction of air into the shell has dried that portion of the white of the egg which moistened the feathers in the contact with the membrane, and the chicken finds itself glued to its place: to relieve it from this predicament the shell may be broken in pieces: but it would be better, to guard against its sufferings, by moistening with the end of the finger, or a rag slightly wet, all the places where the down is glued; the chicken then disengages itself."

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COMMON THINGS, NO. II.

WELLS.

The theory of springs appears to be well understood. The water which falls upon certain elevated portions of the earth's surface, after percolating through the pores or fissures of various geological formations, frequently arrives at an impenetrable stratum where it is interrupted in its course, and forms a subterranean reservoir, or its direction is changed, and it continues to flow along the stratum. When the inclination of the strata and the face of the country are such as will enable these streams to find outlets and appear above the surface, springs are formed.

If this theory be correct, it is evident that springs must always be supplied from higher levels, and that they would be sought for in vain on elevated summits, or on extensive plains. A rolling country with porous substrata presents the conditions most favorable for their formation. In situations where these natural supplies cannot be obtained artificial means must be resorted to, and we find that the practice of digging wells was common in the earliest ages.

From the varied character of the strata which compose the crust of the globe it would follow, that subterranean streams must be formed under a great variety of circumstances. The innumerable cracks and fissures which some formations present, may give rise to a corresponding number of streamlets communicating with each other in every direction, or a bed of loose materials may receive the contributions of thousands of such streams and form a reservoir of greater or less extent.

It may often happen that a subterranean film or reservoir of water is connected with another portion at a higher level in which case a hydrostatic pressure upon the superincumbent strata will be produced, proportioned to the height of the source. When a perforation is made through such strata the phenomenon of artesian or overflowing wells is exhibited.

Wells are constructed for the purpose of forming reservoirs of water in situations where it would otherwise be difficult or impossible to procure a supply. They are usually made of a cylindrical form from 6 to 7 feet in diameter and extended to such a depth as will insure the requisite amount, which is determined by observing the quantity which enters in a given time.

Artesian wells differ both in principle and action from those of the common kind, they are not more than from 2 to 4 inches in diameter, and are often carried to a depth of many hundred feet. When they happen to penetrate a subterranean reservoir connected with a source more elevated than the surface at which the perforation is made, the water rushes up with violence, and forms a perpetual fountain.

The operation of boring, although more expeditious than the common mode of excavation, is attended with much labor and expense.

The tools required in the work are of various kinds. Some are designed for piercing through clay or sand, others for penetrating rocks, and others for removing water and rubbish. These tools are attached to the ends of iron rods fixed in a suitable handle and worked by two or more men. The labor is greatly diminished by connecting the rods with a spring-pole placed horizontally over the well.

The principal inconvenience and expense arise from the necessity of frequently raising and changing the rods, they are screwed together in convenient lengths, and when several joints have been attached become too heavy to be removed by hand. To facilitate the operation, a tripod standard is erected over the well and furnished with a pulley, as each joint successively appears above the surface it is unscrewed; the rods are returned in the same manner, one joint being added at a time until a sufficient length is obtained. As the operation must be repeated

at short intervals, it is evident that the expense must increase in a greater ratio than the depth.

The most unpleasant circumstance attendant upon this business is the occasional breaking of a rod, a portion of which remaining at the bottom of the well, is an effectual barrier to all further progress until it is removed. To accomplish this implements of various forms have been designed, sometimes the workmen have succeeded in cutting a screw upon the end of the broken rod, and removing it by the attachment of other joints, but from the small size of the excavation, and the great depth to which it is sometimes carried, it is evident that such an achievement must be regarded as a triumph of mechanical skill.

It frequently happens that streams or films of impure water are passed through before reaching a stratum of the desired quality; to prevent the mixture of those waters, and also to protect the well from rubbish, the interior must be lined with a metallic tube.

The height to which the water will rise in these wells depends of course, upon the level of the source from which it flows. Sometimes the pressure is sufficient to throw a constant stream several feet into the air. Sometimes too it does not rise to the surface, and a well of the ordinary kind must be dug to meet it, and a reservoir in which a sufficient quantity can be retained for use. Common wells may be occasionally improved by boring holes in the bottom on the artesian principle.

The temperature of the water of artesian wells is very uniform, and is proportioned to the depth to which they penetrate. This fact is used in support of the theory of central heat.

H. H.

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GEOMETRA DEFORIARIA.

At the meeting of the Cincinnati Horticultural Society, on Saturday the 21st of last month, the following communication was read by Mr. Edward J. Hooper, one of the Editors of the *Western Farmer and Gardener*. We learn from the Cincinnati papers, that this insect has been very destructive in that region, devastating the orchards far and wide. On both sides of the Ohio, whole orchards have been stripped by it of their leaves, and look as brown and naked now as they did in January. Its ravages are not confined to apple trees, but it has also attacked cherry and plum trees surrounding dwelling houses, and isolated elm, locust, and other shade trees standing in open fields.

"This moth comes out of the earth, according to Mollar, an Austrian writer on destructive insects, in the beginning of winter, and seeks out a fruit tree, like the green winter moth, to lay her eggs on. The male

is as large again as that of the winter moth. Its broad fore-wings are of a reddish yellow, covered with many blackish dots. From the anterior border, not far from the tips of the wings, a dark wavy line stretches across through these dots to the posterior border. Near to this line, almost in the middle of the wings, is a black dot. The under wings are a dirty white, doted with brown, and in the middle of the wings is a black dot. The female has no wings, is much larger than that of the winter moth, and has no rudiments of wings. The head and body are whitish, covered with black streaks and dots, and the feet annulated with yellow and black.

This caterpillar is very destructive to the foliage of fruit trees in certain years, often coming in succession, when it appears in great numbers, as is sometimes the case. As a single female of this insect lays about 200 eggs, the caterpillars of a few females are sufficient, if they all live, to strip a fruit tree entirely of its leaves, particularly if it is a young one. It is not easy to take these caterpillars, because they live singly, and are scattered about on the fruit trees, and it is not till they are nearly full-grown, and have partly stripped the tree, that they attract the eye. But the female moths are easily kept from the trees, when they are provided with a wooden boot, frame or box, daubed on the outside with tar or cart grease. This frame consists of four boards about a foot high, and rather longer than the diameter of the tree they are to surround. These four boards are to be nailed together in the form of a square open box, but the fourth board is not to be fastened on till the frame is placed round the tree, as the stem must be entirely enclosed by the boards. To prevent the sun or rain from having any effect on the tar or cart-grease, the top of the frame is to be surrounded with a moulding; that is, a thin piece of wood three or four inches broad is to be nailed on the top, so as to form a projection on the outside, and under this an angle. This angle, formed on the outside only, is to be thickly smeared with tar. This frame may thus be called a boot, as the stem of the fruit tree stands as if in a boot. It must be set an inch deep in the earth, which must be well trodden in round it, so that the moths may not get under it and reach the tree. The boot ought not to be made too large; but should be so fixed as to allow of but little space between it and the stem, that it may be more certain that no pupae or chrysalids of the moth lie between the boot, and consequently very near the trunk. This boot must be put in use about the end of October. At first it must be smeared 2 or 3 times, to keep it from drying into the wood. In the spring it must be daubed again—and again in April. The female moths come out the latter part of autumn, and as they are without wings, they

creep up the tree to deposit their eggs. They cannot, therefore, pass the boot smeared with tar, and remain sticking in it if they make the attempt. If this boot cannot be used, go in pursuit of the female moth every evening in October and November, or strike the branches of the trees with a long pole enveloped in tow or linen, in May, to throw down the caterpillar. Mow the grass short under the trees, or spread a sheet to catch them in. In bare ground they are easily seen.

We do not like to predict evil, but we are greatly afraid this measuring worm is going to be the greatest fruit-tree pest of all our noxious insects. We ought to be on the look-out for the female moths this next fall or winter. This last spring dreadful have been its ravages round our city on both sides of the Ohio. For two years large orchards have been denuded of both leaves and fruit. The trees, however, have all put out their foliage again, and therefore, it is a consolation they are not killed. This is, no doubt, an insect imported from Europe, within 4 or 5 years with trees and grafts, &c.

There are, undoubtedly, many varieties of the *geometra*, and the millers or moths, as well as the caterpillars, are of somewhat different forms and colors. The miller of one kind is of a dull slate color and rather small, of the shape and size of the bee moth, (*tinea mellonella*.)

*High Hill farm, near Newport.*

E. J. H."

## COLLEGE RECORD.

*Jefferson College, Canonsburg, Pa.* The venerable President of Jefferson College, Matthew Brown, D. D. having resigned his station in that Institution, the Rev. Robert Breckenridge, D. D. of Baltimore, Md., has been elected his successor. This arrangement is to take effect at the commencement of the next winter session. President Brown carries with him into his retirement the warm attachment of hundreds of young men who have been educated under his auspices, and who will unite with us in the prayer that the remainder of his life may be as calm as the past has been useful.

*Dickinson College, Carlisle, Pa.* President Durbin has resigned his situation in this Institution, with the view of resuming the active duties of the ministry.

*University of Virginia, Charlottesville, Va.* The disgraceful disturbances in this Institution having been terminated by the intervention of the civil and military powers, the Professors generally are said to have resigned. We do not see, however, that any of them have withdrawn, except Judge Tucker, for whose chair an incumbent is sought.

*Nassau Hall, Princeton, N. J.* Hon. Lucius Q. Elmer, of Bridgeton, N. J. is to deliver the Annual Address before the Literary Societies at the Commencement, which, we believe, now occurs on the first of July.

*Pennsylvania College, Gettysburg, Pa.* An unusually large number of students entered this Institution at the commencement of the Summer Term, both in the Preparatory Department and in the classes of the College proper. We presume that the Annual Catalogue will show a large increase of students over the last year.

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FAIR FOR THE BENEFIT OF THE LINNAEAN HALL.

According to announcement, the Ladies of Gettysburg, opened a fair for the benefit of the Linnaean Society. It commenced on the evening of the 1st of July, and closes on the 4th. It was a most tasteful and even splendid affair. A great variety of useful and fancy articles received universal admiration, and the refreshments of the richest cakes, ice-creams, fruits, &c. were as elegant as they were abundant. We have not space for a catalogue of the articles, but were particularly struck with the fine display of worsted-work and embroidery, slippers, mats, &c.; purses and bags knit of fine silver and steel beads, the variety and beauty of the designs and drawings upon perforated paper and cards forming needle-books, book-marks, &c. Our utilitarian notions were also abundantly satisfied by a large supply of substantial clothing for infants and children.

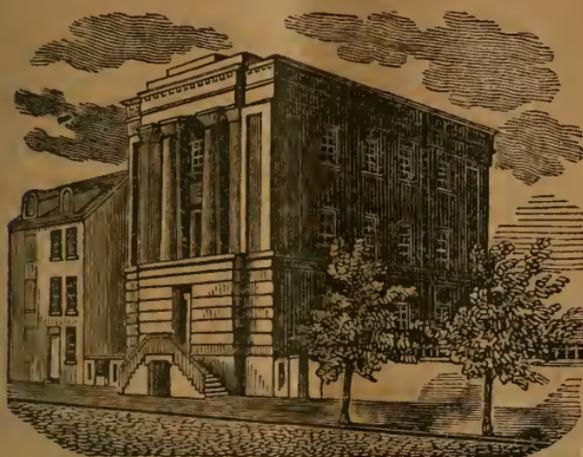
It was a matter of surprise to all visitors, that so large an amount of articles of this kind, could have been got together at so short a notice, and furnishes strong evidence of the industry as well as of the varied accomplishments of our fair friends in Gettysburg. The Ladies of Philadelphia, Baltimore, Reading, York, Hanover, Chambersburg, and Hagerstown also contributed most liberally and tastefully.

Our young literati also signalized themselves by bringing out a paper for the occasion, called the "VILLAGE BELLE," some hundred copies of which met with a ready sale.

From present appearances (the fair not having closed when our present No. goes to press,) we believe, that about six hundred dollars will be realized from the proceeds, so that the Society will not only be placed under the strongest obligations by this liberal donation from so unexpected a quarter, but will be highly encouraged to prosecute its undertaking with vigor and promptness. We hope to see the Linnaean Hall completed in the course of the ensuing year.

# PENNSYLVANIA MEDICAL COLLEGE,

Filbert above Eleventh street, Philadelphia, Pa.



## MEDICAL FACULTY AT PHILADELPHIA.

WM. DARRACH, M. D.—*Prof. of Theory and Practice of Medicine.*

JOHN WILTBANK, M. D.—*Prof. of Obstetrics and Diseases of woman and children.*

WM. R. GRANT, M. D.—*Prof. of Anatomy and Physiology.*

H. S. PATTERSON, M. D.—*Prof. of Materia Medica.*

D. GILBERT, M. D.—*Prof. of Principles and Practice of Surgery.*

W. L. ATLEE, M. D.—*Prof. of Medical Chemistry.*

# Pennsylvania College, Gettysburg, Pa.

## FACULTY AND INSTRUCTORS.

- REV. C. P. KRAUTH, D. D.—*Pres't and Prof. of Ev. of Christ., Moral Philos'y, &c.*  
REV. H. L. BAUGHER, A. M.—*Prof. of Greek Language, Rhetoric, &c.*  
REV. M. JACOBS, A. M.—*Prof. of Natural Science.*  
REV. W. M. REYNOLDS, A. M.—*Prof. of Latin, Mental Philosophy, &c.*  
M. L. STOEVER, A. M.—*Prof. of History and Principal of Preparatory Department.*  
REV. CHAS. A. HAY, A. M.—*Prof. of German Language and Literature.*  
HERMAN HAUPT, A. M.—*Professor of Mathematics.*  
W. H. HARRISON.—*Assistant Prof. of Languages.*  
DAVID GILBERT, M. D.—*Lecturer on Anatomy and Physiology.*  
REV. J. G. MORRIS, D. D.—*Lecturer on Zoology.*  
WM. ALBAUGH, A. M.—*Tutor and Teacher in Preparatory Department.*  
MR. H. R. GEIGER.—*Teacher of Writing.*

PENNSYLVANIA COLLEGE has now been chartered about fourteen years. During this time its progress has been such as to gratify the most sanguine expectations of its friends. The course of studies is as extensive and substantial as that of any Institution in the Country. The *Preparatory Department* provides for instruction in all the branches of a thorough English, business education, in addition to the elements of the Mathematics and Classical Literature. The *College Course* is arranged in the four classes usual in the Institutions of this country.

The government of the students is as energetic as their circumstances seem to require. They attend at least two recitations a day, Church and Bible Class on the Sabbath, and are visited in their rooms so frequently as to preclude the danger of any great irregularities. It is believed no Institution in the United States has more exemplary young men in connexion with it. They are all required to lodge in the College Edifice, special cases excepted.

The annual expenses are—for board, tuition and room-rent, during the winter session, \$61 87½; for the summer session, \$41 87½. Washing, \$10 00; and Wood, \$3 00. Total expense, \$116 75. Boarding can be obtained in town at \$1 25 per week.

There are two vacations in the year, commencing on the third Thursdays of April and September, each of five weeks continuance.

The summer session commenced on the 22d of May, with the accession of over forty new Students.

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- June, 1845. From *H. S. Patterson*, M. D. Prof. of *Materia Medica*, Pennsylvania Med. Col. Philadelphia, one box of shells.  
2. From *Mr. R. G. Harper*, letters written by Washington, cinders from the great fire at Hamburg, minerals, &c.  
3. From *Messrs. Laughlin and Fry*, one white muskrat.  
4. From *Dr. Von dem Busch*, of Bremen, Germany, 50 specimens of shells.  
5. From *Messrs. Fink and Groschlose*, each, one reptile in spirits.  
6. From *Messrs. J. W. and J. K. Miller*, coins.  
7. From *Mr. Ruthrauff*, curious razor strop from the Island of Cuba.  
8. From *Mr. John Weaver, Jr.* some minerals.

TERMS OF THE RECORD AND JOURNAL. *One Dollar per annum in advance.*

Address—"Editors of the Record and Journal, Gettysburg, Pa."

VOLUME 1.]

[NUMBER 10.

THE  
**LITERARY RECORD AND JOURNAL**

Of the Linnaean Association of Pennsylvania College.

AUGUST, 1845.



CONDUCTED  
By a Committee of the Association.

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NEINSTEDT, PRINTER, GETTYSBURG.



THE LITERARY

# RECORD AND JOURNAL

OF THE LINNEAN ASSOCIATION OF PENNSYLVANIA COLLEGE.

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VOL. I.

AUGUST, 1845.

No. 10.

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AMERICAN ZOOLOGY, NO. I.

ENTOMOLOGY.

BY JOHN G. MORRIS, D. D. BALTIMORE, MD.

In a series of short essays I design to give a history of the past and present state of Zoological Science in our country, and it will be gratifying to all readers to learn the rapid progress we have made in this interesting department.

I begin with ENTOMOLOGY. The father of American Entomology is the Rev. T. V. Melsheimer, a Lutheran clergyman who resided in Hanover, Pa., where he commenced his entomological pursuits more than fifty years ago. He soon after began a correspondence on this subject with his countryman, Prof. Knoch, of Brunswick, who is the author of several valuable works on the science. Mr. Melsheimer published no entomological work himself, excepting his celebrated catalogue of the *Coleoptera* of Pennsylvania, which is quoted as authority by every writer on insects. His manuscripts are numerous, the principal of which is a definition of the species enumerated in the catalogue and of about 600 other species not noticed in it. At the death of the father, the collection and manuscripts came into the possession of the son, the Rev. John Melsheimer, who contributed considerably to the promotion of the science by adding many new species to the collection and furnishing Say with such as he wanted and his observations on them. At his death in 1829, the original collection and papers became the property of another son, Dr. F. E. Melsheimer, of Dover Township, York County, who still lives an industrious prosecutor of the science, and one of the most distinguished entomologists of our country. During the last year or two, he has published in the Proceedings of the Academy of Natural Science of Philadelphia, most admirable descriptions of several hundred new species of *Coleoptera*, and I happen to know that he is at work in determining and describing many more.

The late Prof. Peck, of Cambridge, Mass., was perhaps the next person after the elder Melsheimer, who paid any considerable attention to the subject. His descriptions of various species especially injurious to vegetation, were published in Agricultural Journals. He confines his attention, for the most part, to the *economical* department of the science, which is very important. I have the titles of all his papers with the publications in which they appeared, but I have no room to transcribe them.

The first illustrated work on American insects that ever appeared, and which belongs to this period of our history, is *The Natural History of the rarer Lepidopterous Insects of Georgia*, collected from the drawings and observations of Mr. John Abbot. This splendid work appeared in London in 1797, in two large folios, and was edited by Sir James Smith. There are but few copies of the work in this country, one of which is in the Library of Congress. It contains figures and short descriptions of 103 of our Lepidopterous insects. Swainson pronounces it to be "one of the most beautiful and most valuable illustrated publications that England or any other country can boast of."

Catesby's great work on *The Natural History of Carolina, Florida, and the Bahama Isles*, (of which there is a copy in the Baltimore Library.) appeared some years before Abbot's, but it contains only 24 insects figured and described in the two ponderous folios.

The next laborer in this inviting field is the celebrated Say. He has acquired an undying fame by his indefatigable industry and enthusiastic devotion to this pursuit—by his extensive travels in our country in its prosecution—by his numerous writings on the subject, and his extensive correspondence with foreign entomologists. He furnished fifty-four papers of various length for the journals, besides three volumes containing beautiful figures of the species described. He describes 1150 coleoptera, 225 diptera, 100 hemiptera, and 100 species of other orders. Say is the *magnus Apollo* of American Entomologists, and will ever be regarded as one of the acutest naturalists this or any other country has produced during this century. He died in the full vigor of manhood, (aet. 46.) I have the titles of all his papers, and possess most of the papers themselves, which I regard as almost invaluable.

Major Leconte's labors in this field properly belong to this period. This eminent naturalist (yet living) has never published much, but his services have been invaluable. There are several of his contributions in the scientific journals, but his chief work is the part he bore in producing that magnificent foreign work, Boisduval and Leconte's *Histoire generale des Lepidopteres de l'Amerique septentrionale*. He furnished

most or all of the specimens and drawings with observations on the larvae and transformations.

The entomologist next claiming our attention, in the order of time, is Dr. Thaddeus W. Harris, of Harvard University. He has written many valuable papers, which place him in the front rank of our naturalists; but his most important work is a Treatise on some of the insects of New England which are injurious to vegetation. 8vo. pp. 459. This work I would most cordially recommend to every beginner in entomology.

Various other papers on our insects have appeared in Periodicals, and Transactions of learned societies. Several by Prof. Hentz—by Dr. Gould—by Prof. Haldeman, so favorably known by his splendid work on the fresh water univalve molluscae of our country—by Dr. F. E. Melsheimer, whom I regard as the best *practical* entomologist of the country, and not far behind any of them in the *scientific* department—by Rev. D. Ziegler, and Prof. Potter, of Baltimore, who published a pamphlet on *cicada septemdecim*, (seventeen year locust.)

An attempt was made some years ago by Titian R. Peale, of Philadelphia, to publish a work on our Lepidoptera, with plates, but after the issue of several numbers the laudable enterprise failed for want of sufficient patronage.

In Aug., 1842, the Entomological Society of Pennsylvania, was formed at York by a few energetic naturalists, who are prosecuting the science with very commendable zeal. They have nearly completed a catalogue of the Coleoptera of the United States, and have described and published several hundred new species.

It is gratifying to learn that the new association of geologists and naturalists, at their late meeting in New Haven, directed their attention to this subject. A committee was appointed to prepare a Manual of North American Coleoptera. The committee are Dr. Melsheimer and J. Leconte, Jun., and we may before long look for something worthy of their distinguished abilities.

This is, as far as could be ascertained, an imperfect sketch of the history of Entomology in our country. The science is advancing, and new laborers are entering the field every year. It is hoped that the number may soon be very large.

---

#### MORAL ASPECT OF SLEEP.

The constitution of man is such that his capacity to receive sensations from surrounding objects, and to migrate from locality to locality

diminishes, and in this state of impotency it becomes necessary that his vigor should be repaired, or action must cease. Provision has been made by the wise author of our mental and corporeal fabric to renew our exhausted vigor, or to restore our collapsed energies. The senses cease to perform their functions; the powers of locomotion are suspended, and "tired nature's sweet restorer, balmy sleep" takes possession of man. In proportion to the soundness of this state, the suspension of the animal functions referred to is complete. The action of the mind, so far as consciousness is concerned, is arrested in proportion to the perfection of this condition. The mode in which it acts in sleep is that fantastic and incoherent association of ideas called dreaming, which either does not take place, or is not remembered when our slumbers are profound. There is an imperfect sleep in which there is some perception of physical objects, and some physical acts. In one form of sleep, viz. sleep-walking, various acts may be performed. In no condition of the body to which this term can properly be applied, do the vital functions cease. The circulation of the blood is uninterrupted—the nervous energy necessary for vital operations is transmitted—the decarbonization of the blood takes place through the inspiration and expiration of atmospheric air—the nutritive and assimilative functions are all progressive, and removal of effete portions of the body and the requisite restorations to supply their place, all occur. Many and wonderful operations are in progress unsuspected; some perhaps more vigorously performed under the guidance of the *vis conservatrix naturee*, as the doctors say, or under the direction of the infinite wisdom of the Author of the Universe, as religion would teach. It is not easy to furnish the philosophy of this condition. What are the precise changes, and how they occur, we believe are mysteries which have tempted his curiosity, but have never yet condescended to reveal themselves to man. It is known what are the phenomena—what are the circumstances that are favorable, and what are the uses; but beyond this the researches of the physiologist, although they have been faithful, have not been successful. On this subject take a passage from Richerand: "It has been attempted to show the proximate cause of sleep; some have said that it depends on the collapse of the laminæ of the cerebellum, which, as they conceive, are in a state of erection during waking; and they argue from the experiment in which by compressing the cerebellum of a living animal, sleep is immediately brought on. This sleep, like that produced by compression of any other part of the cerebral mass, is really a state of disease; and no more natural than apoplexy. Others, conceiving sleep, no doubt, analogous to this affection, ascribe it to the col-

lection of humors upon the brain, during waking. This organ, say they, compressed by the blood which obstructs its vessels, falls into a state of real stupor. An opinion as unsupported as the other. As long as the humors flow in abundance towards the brain, they keep up in it an excitement which is altogether unfavorable to sleep. Do we not know, that it is enough that the brain be strongly occupied by its thoughts or vividly effected in any way, to repel sleep. Coffee, spirituous liquors in small quantities, will produce sleeplessness, by exciting the force of circulation, and determining towards the brain, a more considerable efflux of blood. All, on the other hand, that may divert this fluid towards another organ, as copious bleeding, pediluvium, purges, digestion, severe cold, or what ever diminishes the force with which it is driven towards it, as inebriation, general debility, tends powerfully to promote sleep. In like manner, is it observed, that while it lasts, the cerebral mass collapses; a sign that the flow of blood is remarkably lessened."

If we look at sleep in itself without any reference to its necessity, it may appear to be a very essential deprivation of our earthly existence. Resembling death, or entire and continued inaction—so that it has been frequently employed by different nations as its symbol—it might appear a foe to man. We certainly by it are prevented from those movements, cut off from those actions that constitute external life and impart the highest value and dignity to our nature.

We should more easily take up the opinion that vigilance is the natural state of man than the contrary. I have never read of more than one man who adopted the theory that the natural state of man is sleep. He was a Dutch physician, who, in endeavoring to reduce his views to practice in his own case, destroyed his intellect and ended his days in a mad-house. It is not improbable that his mental alienation had an earlier origin than his singular efforts to give himself entirely up to the dominion of Morpheus. It is not probable that any one of us will fall into the opposite heresy of despising sleep; the occasions are too numerous in which our feelings and actions exclaim, "Blessed is the man that invented sleep!" but we may fall into erroneous opinions and practices too, and therefore need to be reminded what are the extremes which we should avoid in this matter, and where is the middle ground on which we may composedly lie down, and wrapping ourselves up indulge in a comfortable nap.

Amongst the extravagant notions that have been broached in this world of vagaries, I have yet to learn that any one has maintained that man ought not to sleep. One man, we have seen, adopted the contrary view and proved the absurdity of his theory by its lamentable effects.

We suppose all men have yielded obedience to this law of their nature. We presume it commenced with the first man—it spread its influence over all the nations of the earth. We have heard of no nation that does not sleep. Some may have had theories on the subject; may have philosophized, and they slept. Others may never have meditated on the subject at all, and yet they render homage to the same law. In the only case in which humanity was presented with so many peculiarities, that if any where there might be an exception, it is written of Him, “Jesus slept.”

Some hints to students may here be in place. Arising early, let them, before the day is far advanced, walk abroad and take exercise until they feel moderately weary. Let them then return to their studies, and devote faithfully all the prescribed hours to their appropriate duties. In the remaining hours of recreation, take additional exercise, and devote some of this time to general reading, if it be not necessary for your regular studies. Do not overload your stomachs with food, at any meal, particularly at night. Take care that your chambers are not too warm in winter, and let your fires go down before you retire to bed. If the combustion of your lungs and your stoves is proceeding at the same time, it will rob the air so rapidly of its vital part as to produce an unhealthy atmosphere in a close room, and this will not only be unfavorable to sleep but likewise to health. It will make you pallid and sickly, enervate your strength, indispose you to action, and rob your minds of their wonted energy.

“Sufficient labor during the day,” says that distinguished and christian physician, Dr. Heinroth, of Leipzig, “proper exercise in the open air, temperance, cheerfulness, contentment, and an unsullied conscience, contribute alike to sound repose and pleasant dreams.”

In regard to the quantity of sleep, it is undeniable that a certain amount is necessary. As a general rule, I suppose men both eat and sleep more than is really necessary. Intemperance in both conduces to no good end, but is on many accounts objectionable. It is positively injurious to mind and body. It is not an easy matter to determine the number of hours which the necessities of our frames demand. The best judges concede that it must vary according to circumstances. The stamina of the human system varying in different persons, the extent of exhaustion and the amount of supply must be variously modified. Children and young persons require more sleep than others, mature and old age still less. To this latter fact the writer of Ecclesiastes refers in the graphic representation which he gives of old age: “and he shall rise up at the voice of the bird.” Persons of delicate constitutions re-

quire more sleep than they whose constitutions are vigorous. Intense physical exertion which must be followed by great exhaustion, requires more sleep than where this does not occur. From six to eight hours may be regarded as the medium quantity. Not many can do with less than the first named number, and not many in health require more than the second.

Protracting sleep beyond the necessities of our bodies, is, in a moral point of view, wrong. It obviously contravenes the purposes of our Creator—it is a violation of the counsel given us in revelation to “Redeem the time”—It leaves out of view, the swiftness of our time, the rapidity with which it flits away and the multiplicity and importance of our engagements.

Hear on this subject the words of a very wise man: “Go to the ant, thou sluggard; consider her ways and be wise. Which having no guide, overseer, or ruler, provideth her meat in the summer, and gathereth her food in the harvest. How long wilt thou sleep, O sluggard? when wilt thou arise out of thy sleep? Yet a little sleep, a little folding of the hands to sleep: So shall thy poverty come as one that travelleth, and thy want as an armed man.”

In the hours often wasted in sleep, much might be accomplished for our own good and for the good of others. By reducing sleep to the quantity absolutely necessary, some eminent men have gained time enough to enable them to prepare works of lasting value to the world. Physicians of the highest character declare that it is positively injurious to the health, and in addition stupifies the mind, renders it sluggish and dull, and produces sleepy heads. Regarded as a sin against God, against our own souls, against the welfare of our fellow men, and against our own bodies, excessive sleep stands justly condemned, and our purpose should be not to practice it.

On the other hand, if we attempt to deny ourselves the requisite quantity, we shall sink under the experiment. Both body and mind will be seriously injured; a long train of nervous disorders will ensue. Permanent ill health will be the consequence, and a miserable existence will be dragged out, with a debilitated system; or, a premature death will close the scene. Nothing is more preposterous than attempts in this way to subvert the laws of nature, or the constitution of God. It is morally wrong, and it defeats its own end. Instead of accomplishing more, it accomplishes less. It is a form of self-murder—originating often in a most criminal ambition, and consummated with a most reckless disregard of the authority of the moral Governor of the Universe.

The recumbent posture and the night season should be selected for sleep. With the head somewhat elevated, the arms so located as not to interfere with the functions of the body—not thrown over the head, nor wound around the body. The side posture is better than the back. To sleep sitting is regarded by physicians as injurious, because interfering with the operations of the abdominal viscera. More than two in a small room is objectionable, and it would be preferable if there were but one. MacNish on the Philosophy of Sleep, gives some interesting facts upon the habits of distinguished men in respect to sleep. "Almost all men who have distinguished themselves in science, literature and the arts, have been early risers. The industrious, the active-minded, the enthusiast in the pursuit of knowledge or gain, are up betimes at their respective occupations; while the sluggard wastes the most beautiful period of life in pernicious slumber.

Homer, Virgil and Horace, are all represented as early risers; the same was the case with Paley, Franklin, Priestly, Parkhurst and Buffon, the latter of whom ordered his valet de chambre to awaken him every morning, and compel him to get up by force, if he evinced any reluctance: for this service the valet was rewarded with a crown each day, which recompense he forfeited if he did not oblige his master to get out of bed before the clock struck six. Bishops Jewel and Burnet, rose regularly every morning at four o'clock. Sir Thomas More did the same thing; and so convinced was he of the beneficial effects of getting up betimes, that, in his Utopia he represented the inhabitants as attending lectures before sunrise. Napoleon was an early riser; so was Frederick the Great, and Charles XII; so is the Duke of Wellington; and so, in truth, is almost every one distinguished for energy and indefatigability of mind.

The same law which regulates our desire for food, also governs sleep. As we indulge in sleep to moderation or excess, it becomes a blessing or a curse—in the one case recruiting the energies of nature, and diffusing vigor alike over the mind and frame: in the other, debasing the character of man, stupifying his intellect, enfeebling his body, and rendering him useless alike to others and himself. The glutton, the drunkard, and the sloven, bear the strictest affinity to each other, both in the violation of nature's laws and the consequences. What in moderation is harmless and beneficial, in excess is a curse; and sleep carried to the latter extreme, may be pronounced an act of intemperance almost as much as excess in eating and drinking."

## BIOGRAPHY OF LINNAEUS.

After having visited Mt. Skula, Linnaeus kept on in a westerly direction, until he reached the Doffrafeld mountains, the boundary of Norway. From this point he proceeded north until he reached Lula. What is called the Lapland desert was next to be crossed. This is inhabited by a few straggling people, settlers of remote ages, descendants of the Finlanders, a people entirely distinct from the Laplanders, and of such diminutive stature that they stand to milk the reindeer. The country is entirely destitute of villages, or any cultivation. He ascended the mountain Wallerari, where he found the *Andromeda tetragona*, at midnight, which was then as bright as noon. After crossing the Lapland Alps into Finmark, he passed along the shore of the North sea as far as Saltero, occupying the remainder of the summer in examining this part of the country. Ten years after, Linnaeus, in a public address, declared that he suffered more fatigue and privation in his journey across the desert than he did in all his journeys afterwards. In this tour he had performed, and chiefly on foot, a journey of ten degrees of latitude exclusive of all the necessary deviations.

Notwithstanding the honor which our naturalist received from his successful northern travel, it contributed nothing to cheer his future prospects. An old law of the University excluded any one, who had not received a degree, from the honor of lecturing in public. Rosen, a young student of Upsal, envious of the growing reputation of Linnaeus, procured the passage of a decree preventing him from continuing the course of lectures which he had already commenced. This was a dreadful stroke, in fact depriving him of his only means of support, and so completely did it paralyze the principle of right, that he attacked Rosen with his drawn sword and would probably have run him through the body, had he not been prevented by those around. Revengeful feelings filled his breast, until, one night, suddenly awaking, he was horror-struck at the sinful and rebellious state of his feelings. His penitence was manifested by his efforts to bring back his heart to a right state. His worldly prospects were dark indeed, and might have crushed a man of less nerve and buoyancy of spirits.

In this state of things, several of his former pupils, who were strongly attached to him, determined to undertake a mineralogical tour and invited him to become the head of the party. During this delightful tour they visited Fahlun, the capital of Delecarlia, where he became acquainted with Baron Renterholm, the Governor of the province. The Baron, struck by the uncommon talents of Linnaeus, provided employment for him soon after his engagement with his Upsal friends had ter-

minated. Wishing to send his sons upon a scientific excursion to explore the mines of Norway, he selected him as their travelling tutor. After the completion of this tour, he fixed his residence for a season at Fahlun, where he supported himself comfortably by practising medicine and lecturing.

While his fame was daily increasing, the circle of his friends, won by his irreproachable conduct and pleasing manners, was also extending itself. Here he became acquainted with Dr. Moræus, with the charms of whose eldest daughter he was smitten, and whom he subsequently married. Moræus thought as little of his mineralogy and botany in the way of affording him a livelihood as his father had done, and advised him by all means to bend his energies to the study of medicine, and obtain a degree. This proved a powerful stimulus to Linnaeus, who redoubled his efforts both to economize his resources, and increase his knowledge. Notwithstanding all his efforts, his labors would have been in vain, but for the assistance of the lady of his affections, who generously gave him one hundred dollars which she had laid by from the allowance made her by her father. It is stated by one of his biographers that he was advised by one of his literary friends to marry an heiress, as the surest means of delivering himself from his pecuniary difficulties, he selected Miss Maræus, whose father was the wealthiest man in the place.

As Holland at this time had a high medical reputation, it was customary for Swedes to take their degrees there. In 1735, at the age of twenty-eight, Linnaeus left home to take his degree in Harderwyck, which University he selected as the cheapest and therefore best adapted to his limited means.

After having received his degree, he went to Leyden where he published a compendious sketch of his first work "Systema Naturæ." The great physician and botanist, Boerhaave, was delighted with the new and striking views laid down in the Systema naturæ, and invited the author to visit him. Charmed with his talents and acquirements, Boerhaave earnestly recommended his residence in Holland, where he would doubtless meet with the success which he so richly deserved. But he was anxious to return to Sweden and his funds were low. Passing through Amsterdam, he was cordially welcomed by Bursman, professor of Botany, to whom he had been introduced by Boerhaave. Bursman was then preparing the Ceylon plants, and desired very much the aid of Linnaeus. "Will you aid me in my Ceylon collection? Will you, can you stay?" he eagerly inquired. The traveller frankly confessed that his poverty made it important for him to return home as fast as possible.

His only difficulty Bursman obviated by receiving him into his house where he remained until spring.

After his engagement with Bursman had terminated, he became physician to George Cliffort, Burgomaster of Amsterdam, and of a princely fortune. Cliffort's connexion with the Dutch East India Company and immense wealth enabled him to enrich his garden at Hartecamp with natural curiosities from India. Whilst the prevailing taste of the age and his own inclination made him one of the most munificent patrons of horticulture. Here Linnaeus was in an earthly paradise; surrounded by curiosities from all parts of the world, enjoying access to a splendid library, with a munificent patron to procure all he wished, there was nothing more to be desired.

Here we will leave our naturalist, for the present, rejoicing that, after so many labors and difficulties, he is at length reposing in the blessings of a well-earned reputation, and the gratification of his fondest anticipations.

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SCRIPTURE INSECTS.

*Baltimore, July, 1815.*

DEAR L.—In your last letter you ask my opinion in relation to the animals mentioned in Lev. xi. 20—23. The English text is as follows: “All fowls that creep, going on all four, shall be an abomination unto you. Yet these ye may eat of, every flying creeping thing that goeth upon all four, which have legs above their feet, to leap withal upon the earth; even these of them ye may eat; the locust after his kind, and the bald locust after his kind, and the beetle after his kind, and the grasshopper after his kind. But all other flying creeping things, which have four feet, shall be an abomination unto you.” Now, what does Moses mean by “*fowls* that creep, going upon all four?” In looking at the Hebrew text, I find that a more literal translation would be “every *winged* or (flying) creeping thing *walking* on four feet,” so he evidently means that *insects* in general shall not be eaten by the Jews, excepting those subsequently specified. But you will at once start an objection that all perfect insects have *six* feet, or as *you* would scientifically express it, they are *hexapodal* animals. I reply that Moses evidently regarded the two anterior feet as arms or paws, and this opinion is confirmed by Bochart in his *Hierozoicon*. This, then, would exclude from the Mosaic dialectics all insects excepting *locusts*, or more properly grasshoppers, for the word *locust* is improperly applied to the musical animal which bears that name in this country. The scripture locust is the grasshopper. Why do I conclude that locusts or grasshoppers were al-

lowed to be eaten? From the text, which says that those “which have legs above their feet to leap withal,” and from the express mention of the locust. All these insects which have what entomologists call *crura saltatoria*, (leaping legs,) might be eaten, and those which have them not, were forbidden. But you will reply, “that in the 22d verse, the *beetle* is mentioned as allowed for food, and that has no leaping legs.” I reply that our translators use the same word incorrectly. The Hebrew word is *Chargol*, which Gesenius defines to be “eine *Heuschreckenart*, essbar und geflügelt,” and I see that Rosenmüller in his notes to Bochart, considers it probable to be the *Gryllus Onos*, or *papus* of Linné, and you know that the genus *Gryllus* does not belong to the order of beetles or *coleoptera*.

The result of the whole is that the Israelites were forbidden to eat all insects, excepting of the locust, that is, the grasshopper family, which we well know constituted a common article of food in the East.

In the 22d verse, Moses specifies the kinds of grasshoppers which were allowed. The English translation conveys no very distinct meaning, and Luther aware of the difficulty of determining the species, has retained the Hebrew words in his German version, thereby showing his usual good sense. Various writers have tried their ingenuity and displayed their learning, in endeavoring to make out the specific kinds of grasshoppers indicated by the Hebrew words of Moses, but their researches are not satisfactory. One thing is certain, that insects, excepting those belonging to the grasshopper family, (*Orthoptera*) in its various stages, were not allowed as food to the Israelitish nation.

It would be interesting to discuss the reasons of the distinction between food in the Mosaic system. Many curious facts are connected with it, whilst it displays the most profound views of political economy and religious propriety; but I have neither room nor time for such discussion at present. Yours, &c.

---

#### DRUIDISM.

When the first christian Missionaries landed upon the shores of England, they met with a wonderful people, and a wonderful religion. The conflict commenced—the new against the old—the pure spirit against shadowy superstition—the simple word against corrupted tradition—light against twilight—truth against fable. The one, clothed in the whole armor of God, fought for his word and everlasting reward. The other, in the might of bold confidence, and shielded by the awe and mystery that age and fable had thrown around their religion, fought for the faith of their

ancestors, for the time-honored sanctities of their system, and for superstition. The conflict was not long; the banner of the cross soon waved in victory, and Druidism fell,—since then, old Time, in his conquering march, has been heaping obscurity and darkness and romance around all that remained of it, until its truths and beauties beam forth but faintly from the dim twilight of fable that surrounds it.

The Druids claim their descent from Japhet, through his son Gomer, who was the ancestor of the Gauls, which is probable, as Japhet certainly settled in that part of the country; and the Edui, who were the most ancient tribe of Britain, derive their name from Ades, which Josephus supposes to have been synonymous with Gomer. Certainly the Cimmerians are thus descended, and their name is but a corruption of Gomerian.

There were three orders, the Bards, the Ovates, and the Druids, distinguished by their different offices of singing, serving, and ministering. They dressed differently in blue, green, and white robes.

The system and whole ceremony of Druidism is an interesting and curious mixture of sublimity and barbarism, perfectly joined and perfectly distinct. Truth is one and indivisible, and like mercury it assimilates itself to nothing, so that what was true in Druidism, though mixed with error, was still separate and distinct. Like the fabled apples of Ishtar, all sweetness upon one side, and all bitterness upon the other—so Druidism in its one aspect presents truths and charities that a christian might embrace, and in its other, cruelties and horrors that would blanch the cheek of Paganism. All the systems, and superstitions, and fanciful speculations, and Protean theories that we can trace upon the face of all history, whether curious, bold, puerile or sublime, seem to have found an experiment, if not their embodiment, in the theology of the Druids. In their mysterious “Logan Stone,” we see the *accommodating* justice of the middle ages; in the wonder-workings of their sky-tubes, we detect a resemblance to judicial astrology; their symbolical idolatry likened their theology to that of ancient Persia; in their belief in the transmigration of souls, we see the religion of the Brahmins; the wonders of their mystic crystal, remind us of Eastern magic, or modern Gypsyism; in their veneration for animals, we see the superstition of Egypt; their tatooing reminds us of the manners of North American Indians; in their human sacrifices we detect a similarity to the cruel rites of Pagan India; in their mysterious “cauldron of the five plants” we see even Shaksperian witchery; their holy and perpetual fires might have been either a type or a copy of the vestal flame of antiquity; their “adder stone,” shadowed forth the superstitions of early Rome; their

stone circles are equivalent to the Gilgal of Joshua; their belief in the immortality of the soul is the highest proof of the sublimity of reason; their mystical symbol of the winged serpent attests their knowledge of the trinity of revelation; and their "One God" places them upon the broad platform of christianity.

There is even now such a charm as soothes the soul, whilst we contemplate their sacred esteem and pure reverence for the mistletoe and holy grove, and prevents us from profanely censuring them for this almost christian idolizing. When the fierce legions of Rome overran this sacred ground, trampling sacrilegiously upon their holy mysteries, and making mock of their holy ceremonies, even *they* were awed into reverence by the still sanctity of these groves of the Druids. Like the Serapian temple of the ancients, these sacred oaks were preserved by the mystery of fable from the ruthless hands of the conquerors. Every thing else that rude soldiery could destroy and lay waste felt the desolation of war: but

"With silent dread and reverence, they surveyed  
The gloom majestic of the sacred shade,  
None dare with impious steel the bark to rend,  
Lest on himself the destin'd stroke descend."

In medical art, mechanical knowledge, and mysterious writing, the Druids were similar, if not superior to the Egyptians; their optical instruments are sufficient evidence of their astronomical skill, and their use of the hazel and oak and ash twigs as symbols in communicating and concealing knowledge, make it plain that they possessed "the hieroglyphic art." Their skill in building and architecture is plainly evidenced by the

\* \* \* "Mysterious rows  
Of rude, enormous obelisks, that rise,  
Orb within orb, stupendous mountains  
Of artless architecture, such as now  
Oftimes amaze the wandering traveller,  
By the pale moon discerned on Sarum's plains."

There was a part of the theology of Druidism that, judged even by the strict standard of revelation, merits our admiration, and, judged with the allowance generally meted out to the religions of "olden time," strikes us with mysterious wonder, and defies all panegyric. The startling marvel of man's immortality, and the great truths of God's unity and trinity, were discovered and preserved amid all the corruptions of superstitions and false reason. The answers to the interrogatories which set forth the principles of Druidism, were always three-fold, supposed

to have been emblematic of the trinity, viz: What are the objects of Druidism? To make men brave in battle—to teach them that their souls are immortal, and that another life awaits them beyond the grave. What are the foundations of knowledge? Bold design, frequent practice, frequent mistakes. What are the foundations of learning? Seeing much, suffering much, studying much. Their idea of the “three circles,” of space, of courses, of happiness, under which the whole universe of mind and matter, of action and passion, was comprised, is not unworthy of the shrewdness of modern metaphysics. The regular gradation of being and virtue from *Amoom* to the right hand of the Godhead, is a beautiful and rational fiction, worthy of the brightest fancy and the deepest reason.

Their worst feature, and that which robs the whole system of half its charms, and half its beauty, was their prodigality of human life: their exalted idea of God induced them to think that any oblation less than man was an abomination. But human sacrifice was no necessary part of their religion—sometimes it obtained, sometimes it did not; it was

\*   \*   “A baleful rite,  
That, in the lapse of ages, had crept o’er  
Diluvian truths, and patriarchal lore.”

With the Druids there was no idolatry—no downright, plain, culpable deification of created things; if there was any, it was, like the Persians, purely symbolical. At first they worshipped God, in his star-lit chambers, and roofless temple, and open firmament, in purity and in religion; but the contemplation, much less the worship of God, incomprehensible, invisible, and uncreated, is a task beyond the powers of man without the Holy Spirit and the Gospel. It was too great a task even for the Druids—then they worshipped the sun and moon—however, only as symbols of the unseen God.

Druidism was potent, not only in its reality, but in its mystery; and there was mystery in it—mystery enough to chain the homage and faith of a rude people for centuries—mystery enough to challenge the veneration of fierce enemies—mystery enough to perpetuate its influence generation after generation—mystery enough to baffle long the efforts of opposition, of time, and of truth—mystery enough to repay ten-fold the curious student—and there is mystery in it still. Yes, this dim spirit of mystery which wings its way to us through “the voiceless twilight of ages,” still has a potent spell for the soul.

*College of St. James, Md.*

## COMMON THINGS, NO. III.

## PUTREFACTION—PREVENTION, &amp;C.

It was stated in our first article that when certain animal and vegetable substances are exposed to heat and moisture, fermentation takes place, and acetic acid or vinegar is generated. In substances which contain nitrogen or azote a different fermentation ensues, called putrefaction, some remarks upon which, with the means for its prevention, will form the subject of the present article.

The decomposition of azotised plants and of animal bodies, takes place spontaneously when exposed to heat, air, and moisture. During this process the elementary substances which entered into the composition of the bodies form various new and gaseous compounds. The oxygen, hydrogen, nitrogen, carbon, phosphorus and sulphur, form by their combinations water, ammonia or hartshorn, carburetted, phosphuretted, and sulphuretted hydrogen. Most of these gases, and especially the latter possess an intolerable odor, the result of their combination every one knows who has enjoyed a close proximity to a carrion. After the evolution of the gases there remains an earthy residuum consisting of decayed mould with charcoal.

As putrefaction cannot proceed except on certain conditions, by removing these, the progress of decay may be retarded, or wholly arrested.

The first mode of prevention is by the chemical changes of the azotized substances, resulting in the formation of new and more permanent compounds.

Albumen is that substance which both in animal and vegetable bodies has the greatest tendency to putrefy, and upon it all the processes for their prevention are designed to act. When albumen is dissolved in water, a moderate heat is sufficient to render it putrid, but when coagulated by heat, or otherwise, it becomes insoluble and much less liable to change. In this state it may be dried, and thus rendered unsusceptible of spontaneous decomposition.

Albumen may be coagulated by heat as is exemplified in the boiling of eggs, the white of which consists principally of this substance. After this operation they may be kept for a long time.

It may be coagulated by acids without being separated from its solutions. Vinegar is commonly used in this way for the preservation of meats and vegetables.

It may be coagulated by tannin, which also unites with the gelatin of animal bodies and forms indestructible compounds. Upon this fact the art of tanning is founded.

It may be coagulated and preserved from putrescence by alcohol, oil of turpentine, and some other volatile oils. Creosote possesses a most decided power of coagulation; a very minute portion in vinegar being sufficient to preserve meat that has been soaked in it, to which it also communicates a smoky flavor. The process of smoking meat owes its efficacy in a great degree to the action of creosote, which always accompanies the smoke from wood. Water takes up but  $1\frac{1}{4}$  per cent. of this oil, but alcohol unites with it in every proportion.

The earthy and metallic salts possess the same property, and are most of them powerful antiseptics. They act by separating albumen from its watery solutions, and forming with it insoluble compounds.

The alkaline salts are not quite as efficacious. Common salt has been used in every age and country for the preservation of meats. Alum is the most energetic of the earthy salts, and is three times as powerful as the muriate of soda.

The metallic salts are much more powerful than the earthy, and form more intimate combinations. A solution containing the one-five-hundredth part of nitrate of silver, is said to be capable of preserving animal matters from corruption. Corrosive sublimate has been extensively used in the preparation of specimens for museums, and experience has fully proved its entire adaptation to this purpose. Similar properties are possessed by arsenic.

We have now explained only one of the general principles upon which the decomposition of animal and vegetable substances may be prevented, viz. by the chemical change of the azotised substances; three other modes yet remain to be described, but as we have almost attained the limit of our article, their explanation must be postponed.

In reflecting upon the various substances which have been and may be used to arrest the decomposition of animal and vegetable tissues, a wide field of the most important investigation is opened to our view.—How important to society, we might say to every individual in society, is the question, What is the best mode of preserving animal and vegetable substances from decay? In the art of tanning we see an illustration of its importance. What could we do without leather? Large quantities of food which might have afforded wholesome nutriment to man and other animals, become corrupt and poisonous—the timbers used in construction, the posts of fences, our houses and ships, are all liable to rapid decay, and produce an annual loss of millions. It is by no means certain that a cheap and efficacious mode of remedying the evil cannot be discovered. We know of some that have been fully tested, and have been found to answer. Corrosive sublimate in the proportion of 1 pound

to 5 gallons of water, will make a solution with which when timbers are saturated, they may be exposed to the most active agents in the production of decay without injury; but the cost is too great—coal, too, answers a similar purpose, but it cannot always be procured or conveniently used. Might not some of the cheap mineral acids be employed? Might not arsenic in some form be used in place of corrosive sublimate? Might not some of the cheap saline solutions be found efficacious? Might not something cheaper still be discovered? If a common post worth six cents can, by the absorption of three or four cents worth of a solution be made more durable than a locust tie for which on railroads it has been customary to pay seventy-five cents, what an immense saving of expense would be produced, and what a public benefit would be conferred! A farmer could then build his fences with the expectation of seeing them last a lifetime. A naval constructor would no longer search for live oak, he would take the commonest timber of the forest and render it more nearly imperishable than the best.

One more suggestion and we shall conclude. Might not small animals be preserved by injecting them with creosote and alcohol? We have heard that a process has been discovered by which such preparations can be made without the trouble of skinning and stuffing, but how, we have not learned—perhaps by immersing a small animal in such a solution, then taking it out, putting it while soft in a suitable position and setting it away to dry, it might be effectually preserved; and amateurs would then find no difficulty in getting their specimens in shape—it would not suit, however, for large animals.\*

The writer has made a portion of fence in which solution of arsenic was used to protect the posts; if any gentleman who is curious to know the result, will call about the year 1860, he may be able to ascertain the success of the experiment.

H. H.

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PROF. HALDEMAN'S SYSTEM OF PHONOGRAPHY,  
IN A LETTER TO PROF. REYNOLDS.

DEAR SIR:—I have just opened No. 2 of that very promising little periodical, the Record and Journal of Penn. College, and having read your article, give you a slight sketch of an essay which I have sent to the Am. Phil. Society, entitled "Observations on general Phonology and Alphabetic notation, with an attempt to adapt the Roman Alphabet to exotic Languages."

\* Bears for example.

I have examined a number of attempts to form a new English Alphabet, among others those of Ewing, Kneeland, and Antrim, the last published in Philadelphia in 1843. I have been promised that of Grincke whose I have not yet seen. The *vital error* of these authors is the making of the Roman alphabet the basis of their systems *with a total subversion of the powers* which belong to these characters by universal (except English) consent. Thus *e* = Italian, French and German *i*; *i* is made to represent the diphthongal *ai*; *a* is made *e* in *where* instead of in *far*, &c. We must have a *general* alphabet, or none, one that can be adapted to all languages without variation; no localisms, as *z* for *ts* in German and *dz* in Italian, or *J* for *dj* = *d + j* Fr. The authors above referred to have also failed in their attempts to analyze the sounds of the English language, and several of them have gone to much trouble and expense in having queer-shaped types cut. I propose to use the Roman alphabet with but little modification, except that which can be produced by inverting letters, as Mr. Ewing has done, and I arrange them in *natural order*, according to their affinities, as follows :

## PHONOGRAPHIC ALPHABET.

- { 1 | Eng. *i* in *marine*, French *ile*.
- { 2 7 (or 7) Fr. Eng. Span. *i* in *idiom*. This is *not* a short quantity of the foregoing.
- { 3 E Eng. *e* in *where*. French *é*; German Span. Ital.
- { 4 E (or E) Eng. *e* in *mend*, *met*. Fr. *nette*, Ital. Germ.
- { 5 A Ital. *a* in *amo*, Fr. *ame*, Eng. *arm*. This is also the genuine German *a* of polite usage.
- { 6 A Eng. *a* in *man*, *mat*. Not the short sound of A, as frequently asserted.
- { 7 A Eng. *a* in *fall*. When short, Eng. and Fr. in *opera*, *a* in *what*, Irish *a* or A.
- { 8 O Eng *u* in *mürder*. Fr. *cu*, German *æ* in *Lawe*.
- { 9 O Eng. Ital. Germ. &c. *o*. French *ô*.
- { 10 U Eng. *u* in *rule*, *full*. Fr. *ou*, Ital. Span. Germ. *u*.
- { 11 Y Danish *y*, French *u*, Germ. *ü*, Latin *y*, which is a vowel; Greek *υ*, which in modern Greek has degenerated into *l*, just as the Ger. *übel* becomes *lbel* in vulgar discourse.
- 12 U (or V) Eng. *w* in *wine*, Lat. *uinum*; U<sup>c</sup> *wh* in *when*. U<sup>c</sup> a whistle—Indian languages.
- 13 I (or J) Eng. *y*, Ital. and Ger. *J*. H H Eng. Ger. *h* weak, *h* strong, *h* guttural, *h*<sup>r</sup> aspirate, *h* inspiration, *h*<sup>v</sup> nasal insp.

- { 15 **R**             $\overset{c}{r}$  Ger. French,  $\overset{c}{r}$  French final *arbre*.  
 { 16 **L** (or better, **E**)  $\overset{c}{L}$  Welsh, and French final in *table* (**T**  $\overset{c}{A}$  **B**  $\overset{c}{L}$ )  
 { 17 **M**             $\overset{c}{m}$  a sneer, German *hm!*  
 { 18 **N**             $\overset{c}{n}$  French final n or preceding vowel, as in *mon* (**M**  $\overset{c}{A}$ )  
 { 19 **N** *sing*,  $\overset{c}{n}$  a groan.  $\overset{c}{n}$  a wheeze.  $\overset{c}{n}$  a gasp, (generally on the  
     vowel **O**.)  
 { 20 **K** (or **G**) *gag*, **P** Runic. 21  $\overset{c}{K}$  (or  $\overset{c}{G}$ ) name of the Ger. letter  
     g, Spanish J, Russian I.  
 { 22 **K** (or  $\overset{c}{K}$ ) **V** Runic. 23  $\overset{c}{K}$  or  $\overset{c}{K}$  Germ. *ich*. Irish  $\overset{c}{c}$ . Gr.  $\overset{c}{\chi}$ .  $\overset{c}{K}$   
     harsh Arabic guttural.  
 { 24  $\overset{c}{T}$  (or **D**) in day. 25  $\overset{c}{T}$  Eng. *dh* in *this*. Modern Greek  $\overset{c}{d}$ .  
     ( $\overset{c}{T}$  =  $\overset{c}{D}$ )  
 { 26 **T** (or  $\overset{c}{T}$ ) 27  $\overset{c}{T}$  (or  $\overset{c}{T}$ ) Eng. *th* in *thin*. Rom. Russ. Coptic  $\overset{c}{t}$ .  
 { 28  $\overset{c}{P}$  (or **B**) Eng. b. 29  $\overset{c}{P}$  (or **B**) Ital. Fr. Eng. V, Rus. B. Ger. w.  
     Irish b'.  
 { 30 **P** (or  $\overset{c}{P}$ ) Eng. P. 31  $\overset{c}{P}$  (or  $\overset{c}{P}$ ) Eng. Fr. &c. *f*. Modern Greek  $\overset{c}{f}$ .  
 { 32  $\overset{c}{S}$  Eng. z, in *his*. 33  $\overset{c}{S}$  Eng. s in *treasure*. French j.  
 { 34  $\overset{c}{S}$  Eng. z, in *hiss*. 35  $\overset{c}{S}$  Eng. in *sure*. Ger. *sch*. Eng. *sh*. Fr. *ch*.

The characters between parentheses are mere substitutes of which I do not approve. The consonants of the first column are "lene," and most of them admit of aspiration (as I have elsewhere explained) according to the second column. Moreover, *s* is an acute *z*, and *z* a grave *s*. *V* is an aspirate *b*, or grave-aspirate *p*. The English use of the single character *s* shows how intimately the sounds of the acute, grave, acute-asp. and grave-asp. are connected, and as cognate languages do not change the radical letter of words common to two or more, my notation appears to be the only one adapted to philological purposes, especially the comparison of dialects and allied languages. The German uses *dinte* and *tinte* indifferently, that is *t* varies from acute ( $\overset{c}{T}$ ) to grave ( $\overset{c}{T}$ ). The eye catches the similarity of the German *silber* and the English *silver*, if *b* and *v* be represented by pointed characters, and so on in an infinity of cases.

I represent long quantity by – medial by .. and short by . beneath or above the vowels, and mark accented syllables by accentuals over the vowel, and thrown towards the co-accented syllables, as in *baker*, *báshful*.

Let C = K. Now it is of little account whether we distinguish the allied G by a thickened basè, or a grave accent—so also with B, P, where the distinction lies in an additional loop. My notation is not calculated to make a favorable impression upon the uneducated, but I consider it to be founded upon such uniform principles as to make it more desirable to the philologist, than if separate characters were used for every variety of inflexion. I must confess that *habit* held me to the very last, in considering that the *graves* and *acutes* should have distinct characters, although I had rejected the aspirates *v*, *f*, &c. at an early period of my researches. You perceive that we have hit upon the same word, “phonography.” I use the nearly similarly derived word *phonogram* for a letter or character representing an invariable sound.

I am unfavorably disposed towards double letters as  $\bar{x}$  for *ks* and  $\tilde{x}$  for *gz*, (as my accentuals would modify this character.) If they are adopted, however, J should be retained for its Italian and German power, when the French power might be represented by j and the Eng. j and g soft by j (*f* inverted) or better, by jj, representing a union of d and J Fr. The dot of i and j should be rejected in print. If aspirate *p* must be represented by F (better P) then English V must have the character L and then we must have six additional characters for the aspirates of k, q, d, t, s, z. Let there be *uniformity* throughout.

My principal reason for preferring *k* to *c* is that the rotundity of the form of the latter is a poor representative of the harshest letter of the alphabet, besides its heterogeneous use in the various languages of Europe.

I am very glad that a new Alphabet has *not* been applied to the English language, because, judging from those which I have seen, the result would have been unsatisfactory. There should be a *convention* of those favorable to the project, that every point might be discussed in order. I think in such an event it would not require much time to decide that *u* is better than  $\emptyset$  (proposed by Kneeland and Antrim,) and the *English* vowel standard the very worst that could be adopted, and which would forever *deter* foreigners from studying the language, instead of drawing them to it.

A new alphabet would affect etymology but little, as we would gain in *pure* English the little that we lost in words of Latin origin. Besides, the Italians are more interested in the Latin than we are, and they unhesitatingly sacrifice *ph* for *f*, as in *Filadelfia*. But the pretence about etymology is pure hypocrisy, one of Webster’s greatest *faults* in the eyes of his columniators, being the changes by which he wished to make many words etymologically correct, as *fether*, *tung*, *labor*, &c.

Yours,

S. S. HALDEMAN.

## INSECTS OUR PIONEERS IN THE ARTS.

Shame upon the man who turns with contempt from any thing God has seen fit to create and esteems worthy of his continual protection! The *least* of God's creatures displays the unapproachable excellencies of his character, oftentimes more strikingly than the greatest. The attentive observer finds himself richly repaid by stooping to examine the smallest insect; and the word of God even urges him to make their habits a subject of study. Much may be learned from them. Not merely habits of industry, which we suppose was mainly intended by the sacred penman when he wrote "Go to the ant, thou sluggard, consider her ways and *be wise*;" but also many things that could be profitably employed in the arts, and many contrivances to add to our comfort. One thing is certain, viz. that these little creatures have anticipated us in many of our most highly prized inventions. Ought they to be called *inventions*? Are they not merely *discoveries* of what had long before been known by our teachers in miniature?

In the first volume of Kirby and Spence's Entomology, (a work which every man should read before he ventures to express the merest opinion on the subject of entomology,) some of the anticipated inventions are summed up in the following language: (p. 14, v. I.)

"The lord of creation plumes himself upon his powers of invention, and is proud to enumerate the many various useful arts and machines to which they have given birth, not aware that "He who teacheth man knowledge," has instructed these despised insects to anticipate him in many of them. The builders of Babel doubtless thought their invention of turning earth into artificial stone, a very happy discovery; yet a little bee had practised this art, using indeed a different process, on a small scale, and the white ants on a large scale, ever since the world began. Man thinks that he stands unrivalled as an architect, and that his buildings are without a parallel among the works of the inferior order of animals. He would be of a different opinion did he attend to the history of insects: he would find that many of them have been architects from time immemorial; that they have had their houses divided into various apartments, and containing staircases, gigantic arches, domes, colonnades, and the like; nay, that even tunnels are excavated by them so immense, compared with their own size, as to be twelve times bigger than that projected by Mr. Dodd to be carried under the Thames at Gravesend.

The modern fine lady, who prides herself on the lustre and beauty of the scarlet hangings which adorn the stately walls of her drawing-room, or the carpets that cover its floor, fancying that nothing so rich

and splendid was ever seen before, and pitying her vulgar ancestors, who were doomed to unsightly whitewash and rushes, is ignorant all the while, that before she or her ancestors were in existence, and even before the boasted Tyrian dye was discovered, a little insect had known how to hang the walls of its cell with tapestry of a scarlet more brilliant than any her rooms can exhibit, and that others daily weave silken carpets, both in tissue and texture infinitely superior to those she so much admires. Other arts have been equally forestalled by these creatures. What vast importance is attached to the invention of paper! For near six thousand years one of our commonest insects has known how to make and apply it to its purposes; and even pasteboard, superior in substance and polish to any we can produce, is manufactured by another. We imagine that nothing short of intellect can be equal to the construction of a diving-bell or air-pump—yet a spider is in the daily habit of using the one, and, what is more, one exactly similar in principle to ours, but more ingeniously contrived; by means of which she resides unwetted in the bosom of the water, and procures the necessary supplies of air by a much more simple process than our alternating buckets—and the caterpillar of a little moth knows how to imitate the other, producing a vacuum, when necessary for its purposes, without any piston besides its own body. If we think with wonder of the populous cities which have employed the united labors of man for many ages to bring them to their full extent, what shall we say to the white ants, which require only a few months to build a metropolis capable of containing an infinitely greater number of inhabitants than even imperial Nineveh, Babylon, Rome, or Peking, in all their glory!”

That insects should thus have forestalled us in our inventions, ought to urge us to pay a closer attention to them and their ways than we have hitherto done, since it is not improbable that the result would be many useful hints for the improvement of our arts and manufactures, and perhaps for some beneficial discoveries.

A LOVER OF NATURE.

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#### CABINET OF THE LINNAEAN SOCIETY.

Our readers have, no doubt, observed with satisfaction the steady increase of the Linnaean Cabinet, donations to which are acknowledged monthly upon our outside cover. These articles do not lie as useless and confused masses of lumber in our hall, but are from time to time regularly and scientifically arranged. The President of the society, Dr. MORRIS, a few weeks since, thus arranged and labelled the shells and crustacea, according to the system of Lamarck, so that students in this department, here possess every advantage. The minerals and fossils, of which the collection is very extensive, were, at the same time, placed in similar order by Prof. JACOBS, who has the care of this department of Natural Science in Penn. College.

## OBITUARY NOTICE OF CHRISTIAN UHL.

*Multis ille bonis flebilis occidit  
Nulli flebilior quam mihi.*

Died, on the 13th ult., CHRISTIAN UHL, a member of Pennsylvania College, in the 25th year of his age. Mr. Uhl was from Millersburg, Holmes county, Ohio, and entered the Institution a few years ago with the design of qualifying himself for the christian ministry. He had nearly completed Sophomore studies, and was looking forward with bright prospects to the future, when death suddenly marked him as his victim, and snatched him from our midst. Although every thing was done for his recovery that either friendship or affection could prompt, disease baffled all effort and seemed only to laugh at the medical skill employed. The poignancy of death was, however, overcome by a sweet reliance upon Him in whom he had trusted for salvation. He felt his confidence unshaken in prospect of the eternal world, and peacefully closed his eyes upon the earth with the sustaining hope of awaking on the morning of the resurrection to a glorious and blissful immortality. Sensible of his approaching end, he was perfectly resigned to the Divine will, and was permitted to bear the clearest and most decided testimony to the preciousness of Christ and his Gospel.

On the succeeding day his mortal remains were borne to the grave, accompanied by his classmates and fellow-students, his instructors, and a large concourse of citizens, all anxious to show the last tribute of respect to the memory of one who was highly esteemed in life. The exercises connected with the funeral, were exceedingly solemn and affecting. An impressive and appropriate discourse was pronounced in the College church by President Krauth, from the words, "*It is the Lord;*" in which the speaker, after referring to the many virtues of the deceased, urged his hearers to lay to heart the solemn lessons addressed to them on the mournful occasion; to remember their own mortality, and prepare to meet their God.

Mr. Uhl possessed, in an eminent degree, those excellencies which generally secure esteem. His kindness of heart, his amiability, his frankness and freedom from all guile commanded the respect and won the affections of all who knew him. His piety seemed deeply seated in the heart: it was uniform and not mere impulse; a reality and not simply a name. Without any display he strove to walk in the statutes and ordinances of the Lord blameless. Religion appeared in him to predominate as a controlling agency, and was not confined in its operations to favorable junctures or circumstances: its steady light shone forth at all seasons and in all places. His moral worth, amiable qualities, his exemplary deportment and christian fidelity, the interest which he manifested for the advancement of piety in the Institution, and the extension of Christ's kingdom at large, will long be remembered with pleasure and cherished in affectionate regard.

Whilst we condole with the distant parents and distressed relatives of our deceased friend, we unite with them in rendering thanks to Almighty God, that he was sustained in the trying hour by the all-powerful consolations of religion, and met with a peaceful and triumphant end. May the lesson here taught us be blessed to our spiritual improvement—sanctified to our eternal good. May we realize that we too are rapidly hastening to the tomb and that ere long we also must join the congregation of the dead.

# PENNSYLVANIA MEDICAL COLLEGE,

Filbert above Eleventh street, Philadelphia, Pa.



## MEDICAL FACULTY AT PHILADELPHIA.

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JOHN WILTBANK, M. D.—*Prof. of Obstetrics and Diseases of woman and children*  
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THE  
LITERARY RECORD AND JOURNAL

Of the Linnaean Association of Pennsylvania College.

SEPTEMBER, 1845.



CONDUCTED  
By a Committee of the Association.

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1½ sheet, periodical—Postage, 2½ cents, to any distance within the Union.

NEINSTEDT, PRINTER, GETTYSBURG.



THE LITERARY  
**RECORD AND JOURNAL**

OF THE LINNEAN ASSOCIATION OF PENNSYLVANIA COLLEGE.

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VOL. I.

SEPTEMBER, 1845.

No. 11.

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NUGÆ ETHNOLOGICÆ, NO. II.

BY PROF. H. S. PATTERSON, M. D. OF PHILADELPHIA, PA.

In alluding to the efforts made to find an account of the origin of the existing varieties of the human species in Scripture, it may be superfluous to mention the hypothesis which would refer the production of the African variety to the curse pronounced against Ham, or rather against one of the offspring of that undutiful son:—"Cursed be Canaan, a servant of servants shall he be to his brethren." So preposterous an assertion could not be made by any man pretending to science. I would not mention it, but that it has been used popularly in lulling the consciences of men to sleep in the commission of the most atrocious of crimes. Cupidity has turned the leaves of holy writ with her blood-stained hands in search of a warrant for her enormities, and thought that here she found authority for her infamous traffic in the bodies of men. The passage in question was read in the Convention to amend the Constitution of Pennsylvania in advocacy of the clause denying the rights of citizenship to all tinged with Ethiopian blood. Yet nothing but a desperate text-hunting in support of established abuses, could have distorted it to this use. If the curse affected all the descendants of Ham, who will believe that the Ninevites and Egyptians, the originators of the first great civilization of which the world has any record, were veritable negroes? The curse, however, is said to apply only to the youngest of the four sons of Ham, this name is mentioned three times in connexion with it, while none of the others are once alluded to. The children of Canaan were the tribes afterwards overcome and well nigh exterminated by the Israelites, and it is probably to this event that the prophetic malediction has reference. That they were Caucasian is indubitable.—This subject may be referred to again.

*In medio tutissimus ibis!* was good advice given long ago, and if generally true, will bear me out in the position I now assume. Those who

deny the unity of the human species may be divided into two classes holding opposite extremes of opinion. The one, struck with the multitudinous evidences of the plastic power of nature, the potency of the affinities of matter, and the surprising effects of those imponderable essences which defy our keenest scrutiny, making themselves known only by their mighty energies, have concluded that the ordinary forces of the material world are competent to the development of organized from unorganized matter. This assumption once granted, it is easy to arrive at the conclusion that the organization thus effected, may be perfected by the same forces which originated it. The production of a man from brute matter by the operation of ordinary laws then ceases to be unreasonable, and may soon be asserted unequivocally. This school may be denominated the *natural historical*. The first traces of its theory are found in the Phœnician and other ancient oriental cosmogonies, it is taught by Virgil (Georg. lib. IV.) and Lucretius, (De Rer. Nat. v. 803,) and has been maintained with more or less distinctness by all who contended for what has been called equivocal or spontaneous generation. The boldest of its modern defenders has been Lamarck, and it has recently been set forth in a popular form by the author of the "Vestiges of the Natural History of Creation." The other class, in endeavoring to avoid Scylla have fallen upon Charybdis. They may be styled the *historical* school. Their starting point is the permanency of the known varieties under many diverse influences and for immense periods of time. Tracing back the historical evidence of the existence of the varieties now known, at a period which the ordinarily received chronology makes the infancy of the race, they expect that the causes which could have produced them in the previous era would necessarily have prevented their permanency from that date to the present. The inference then is, that they must have been either original or effected by a miraculous agency. This school limits the power of the ordinary forces of matter as much as the other extends it. Now the truth appears to me to be between these two extremes. We know that the forces mentioned do produce very important changes in the structure, color, &c. of organized beings—quite as great, as before remarked, as any existing between the varieties of men. On the other hand, I think it can be shown that this effect never extends so far as the destruction of the original specific type. The force exists, but within bounds. It may cause *varieties* but it can never effect a mutation of the *species*. Even were this granted, the case would not be entirely clear, for we might rest on the assertion that it cannot commute *genera*. The procreation, although it is of hybrids, which takes place between individuals of different species in the same

genus, has been much insisted on by some. Yet, when we come to the contemplation of different genera even this slight support to their theory must fail.

In this view, the wide difference of structure and function which exists between man and all the rest of the animated creation, assumes an immense importance, and it may be well for us to pause over them for a moment. And first, it is worthy of remark, that by the general consent of naturalists, man is placed in a separate order, in which he is the sole species of the only genus. His characters are these:—stature erect; two hands; teeth approximated and of general length, the superior incisors perpendicular; chin prominent; rational; endowed with speech; unarmed.

*Man is the only animal that has but two hands*; and hence the order in which he is placed is called *Bimanus*. All other animals that possess limbs are either quadruped or quadrumanous. The first conformation is familiar to all in the ordinary domestic animals, and in the latter class we have the monkeys. The peculiar feature of a hand is the thumb, an organ similar to the other fingers in its structure, but so articulated as to admit of freer motion and of being opposed to the palm. The great toe, on the contrary, is joined firmly to the ankle, and has less motion than any other, being intended principally for the support of the body. It is from the mode of articulation of the thumb that the hand derives its power of grasping and picking up substances. When quadrupeds would hold an object, without the aid of the mouth, they must use both fore-paws, as the squirrel, or press it between the food and the ground, as the dog. The monkey, on the contrary, can perform all the motions of the human hand with either of his four extremities. This conformation is admirably suited to his mode of life, enabling him to climb trees and spring from branch to branch with ease and safety.—Monkeys live entirely in the woods, and cannot run with much speed upon the ground on either two or four limbs. Man possesses two perfect hands and two perfect feet, neither of which can perform the functions of the others. His feet differ from those of quadrupeds principally in the size and strength of the heel, which supports the greater part of the weight of the body, instead of its resting on the extremity of the bone of the foot. By this means he is enabled to walk with as much firmness and facility as the four-footed animals. A larger base is gained for the body, and there are in the sole of each foot two distinct joints of motion. The body at rest is supported on the heel. In walking, the heel is raised by the muscles of the calf and the weight thrown forward on the ball of the foot. The heel of the other foot then touches the

ground, and the same series of motion is repeated at each step. He has therefore as many points of support and motion in his two feet as quadrupeds have in their four. This arrangement proves that he never could have used more than two feet, because they are amply competent to all the locomotion the body requires. This brings us to another point, viz.

*Man and man alone has an erect stature.* His peculiar claim to this posture has been denied by certain naturalists, some of whom assert that he possesses it in common with the monkeys, and others that it is an unnatural, or rather an acquired posture. Both these assertions are unfounded. Man could never have gone on all-fours, because (in addition to the reason already assigned,) of the great disparity in the length of his limbs. The lower limbs are so much the longest that the head would be thrown into a dependant position. Infants invariably crawl upon their hands and knees. In monkeys the upper limbs are as long, and in some species twice as long as the lower, so as to touch the ground when the animal is made to stand upright. Even if the limbs were of equal length, the face in this attitude would be directed towards the ground. In man, the plane of the surface by which the head is articulated to the spine is nearly parallel with the axis of the orbit of the eye. In quadrupeds they approach nearly to a right angle. To look forward, requires that the spine in man should be perpendicular, and in quadrupeds, nearly horizontal. Place a man on all-fours with his head in its natural easy position on the spine, and his eyes will look directly at the earth. Place a quadruped upright, and its eyes will be turned as directly up to the zenith. In the inferior animals the spinous processes of the vertebræ of the neck are long, and are connected to the head by a strong, dense ligament which will keep it from drooping when the muscles are relaxed and at rest. In man this provision is wanting. Monkeys, on the other hand, are equally incapable of going erect. They are never found in this attitude in nature, and those which have been kept in Museums, were never able to preserve it long. Instead of planting the sole (or palm) firmly on the ground, they double up the fingers and walk upon the outside of the hand in an awkward, shuffling manner. The part which answers to the heel, does not touch the ground, so that they want the full use of the lever formed by the bony plane between the heel and toe which is the principal agent in man's walking. In the ordinary plates the Orang and Chimpanzee are represented, when in the erect posture, as supporting themselves by a stick upon which they lean to steady their uncertain steps. Their hips are narrow, and the thigh-bones slender and weak, and not furnished with the firm, capacious joint which enables them to support the weight of the body in man.

The human spine increases in size at its lower part in proportion to the weight it has to bear, the lowest vertebrae being very broad and strong; whereas the monkey has them of nearly equal size throughout. These facts prove the propriety of assuming the erect stature as a peculiar characteristic of the human race. It has been so regarded in all ages. Many suppose that it constitutes the image of God in which man was made. It is spoken of in similar terms by the ancient mythological poets. Every classical scholar will at once recall the "*Pronaque cum spectent animalia cetera terram,*" &c. of Ovid. Whether he was created erect, as the poet asserts, that he might behold the sky and raise his sublime countenance to the stars, is more than we can tell. The doctrine of final causes is a very difficult one, and requires to be handled with all delicacy. The alleged cause in this case is certainly more probable than that of the philosopher who suggested that the Creator salted the Ocean to keep it from spoiling. At all events, the fact is indisputable, and that is enough for us.

*The human teeth are peculiar by their approximation in a regular row of equal length.* The perpendicular position of the lower incisors causes the prominence of the lower jaw in the human countenance, and gives it its distinguishing mark, *the chin*. It is to this feature mainly that man owes it that he has a face and not a muzzle. In animals there is also found a bone between the two upper jaw-bones, containing the superior incisors. It was the fact that Galen described this *os incisivum* as a part of the human frame, that first led to the suspicion, since confirmed, that he derived his knowledge of anatomy altogether from the dissection of animals. In man it is wanting entirely. It has not yet been ascertained whether it exists in all the monkeys, but it certainly does in the orang-outang, the most anthropomorphous of them all, except the chimpanzee.

*Man is the only animal in which the lateral is greater than the antero-posterior diameter of the chest.* This conformation is admirably adapted to the free use of the arms, but would be exceedingly inconvenient and unfavorable to strength in the prone position.

*Man is alone in his protracted and helpless infancy.* He requires a much longer dependance upon the mother than the young of any other animal. There is none which gets its teeth at so late a period, or is so long in acquiring the power of locomotion. He is compensated for this by his greater longevity, no mammal of his size living nearly so long.

*Man is unarmed.* He has neither the sharp teeth and powerful jaws, nor the strong tearing claws of the quadrupeds. He has neither the horns of the ox, the coat of mail of the armadilla, nor the bristles of the

hedge-hog. His body is uncovered by hair and exposed to the elements, so as to require artificial protection. The tales told by romancing travellers concerning men clothed with hair, may rank with the equally authentic histories of mermaids and sea-serpents.

*Man possesses speech.* That animals possess a means of communication by sounds is undeniable. A dog's bark, his howl, his whine, his yelp of joy or of pain, are all perfectly intelligible to themselves and even to us. But these are instinctive cries, the natural expression of their appropriate affections, and are the same in all dogs, being made exactly in the same manner by one who never was in the company of another individual of his species. Human language is a system of arbitrary sounds, received by common agreement as the representatives of certain ideas, and varying endlessly. The knowledge of this language can be derived only from a long pupilage, increasing the dependance of the child upon its parents: that of animals is innate.

*Man is found distributed over the whole globe, retaining in every part his distinctive character.* This is the case with no wild animal, all in their natural state being confined to a comparatively small space. The zoology of the western hemisphere differs widely from that of the eastern,—that of Africa from that of Asia. The Spaniards, on landing in America, found not a single animal with which they were acquainted. The same is true of marine animals. It is asserted by the highest authority that there is no well-known animal of the northern hemisphere that is not specifically distinct from every well-known animal of the southern. Every zone has its peculiar inhabitants. The human family is spread equally over and flourishes alike in all. Man can bear the vertical sun of equatorial regions with the lion, and has wintered in Nova Zembla, where even the polar bear departed in search of a more genial clime. This is not the case with men in their original site only, nor are the means of adaptation to circumstances furnished by reason alone sufficient to account for it. Tropical animals frequently perish here during our winter, notwithstanding every care. The anthropomorphous monkeys always sicken and soon die. The white bear with difficulty supports the heat of our summer: yet the British government have at this moment native soldiers and colonists, scattered over the whole earth, from Calcutta to Van Dieman's Land and from Sierra Leone to Hudson's Bay. The human body will bear very various degrees of atmospheric pressure. At the level of the sea, the average pressure upon an ordinary sized body may be estimated at 32,000 pounds. Yet large districts of South America are thickly inhabited, where the barometer stands habitually at 20½, and the pressure is consequently less than 22,000 pounds.

La Condamine lived three weeks at an elevation where the pressure was 17,000 lbs. It is true, that the domestic animals have been carried by man into a great diversity of abodes which they would never have sought voluntarily; but in them the change has been followed by the most remarkable variations of form, size and color. This will be alluded to in another connexion.

*Man is properly an omnivorous animal.* He is not confined to one character of food. Flesh, fish, herbs, roots, grain, fruits, and even reptiles, insects and the bark of trees, form a portion of his aliment. There is scarcely a living thing, not known to be venomous, which has not at one time served as food for man. The locusts and wild-honey of the Baptist are familiar to all. Travellers in Africa have seen the large serpents of the constrictor kind dressed for the table, and have pronounced them excellent food. Viper broth is recommended by the old medical writers as supremely medicinal. The *Helix pomatia*, a species of snail, is habitually eaten in Switzerland, and quantities of it are pickled for exportation. The inhabitants of the arctic regions subsist almost entirely upon the raw flesh and blubber of the whale and seal. Whole tribes of men have confined themselves, from necessity or choice, to a single article of diet. The ancient writers give an account of certain African people whom they style Ichthyophagi, Elephantophagi and Struthiophagi. The late American Exploring Expedition gives us reason to believe that the Struthiophagi are not fabulous. Life appears to be equally well sustained by vegetable as animal diet. The West India negroes who live almost exclusively on fruits and the juice of the sugar cane, are just as vigorous as the meat-eating nations of northern Europe, and no more so. Caravans in the desert of Zahara have lived for weeks on nothing but gum arabic, and persons lost in our forests have supported life by the mucilaginous bark of the slippery elm, (*Ulmus fulva*.) Writers have disputed much as to what is the natural food of man. As we know nothing in nature but what we learn from experience, it might, I think, be answered with propriety, that his natural food is precisely that which he eats. It will probably be found that the most appropriate diet for any people is that with which they are placed most in relation, and which their instincts demand. Under all circumstances man would appear to enjoy the greatest health and vigor with a mixed diet of both animal and vegetable substances. His digestive apparatus is adapted to such a diet. His stomach is simple, as in the carnivora, but so constructed as to retain the food for a greater length of time. In the carnivora, the teeth rise into sharp points, and the canine teeth are long, sharp and strong, to enable them to seize and tear their prey. The enamel is all on the out-

side of the teeth, which are not opposite, but so set as to shut into one another like two saws when the jaws are closed. In the herbivora there are no canine teeth, and the molars are broad and flat, and directly opposed, or are to grind the food between them. The enamel is intermixed with the osseous substance in vertical layers, constituting the raised white lines seen on the grinding surfaces. The teeth of man resemble those of the carnivora in having the enamel all on the outside. He has canine teeth, but they are shorter and less acute, and are soon worn down to a level with the rest of the series. His molars resemble those of the herbivora, but have rounded tubercles covered with enamel on their surface. He is like them also in the freedom of motion of the lower jaw, which approaches nearly to what we see in the ruminants.

But it is in the size and shape of the head, and the peculiarities of function dependant upon it that man differs most conspicuously from all other animals. All the differences noticed are unimportant compared with this, and I notice them only to accumulate the evidence which shows so wide a diversity of structure, as to render a natural developement of man from the inferior types, to say the least, highly improbable. But lest I grow tedious and consume the space so kindly allowed me, to the exclusion of more interesting matter, I must cease for the present.

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#### WRONG NAMES FOR RIGHT OBJECTS.

It is amusing to hear the names given by many people to objects of natural history, and we cannot expect that they will ever be changed until scientific knowledge is universally diffused. I for one do not expect to live to see that blessed period. The most unfounded mistakes prevail even among people who are otherwise well educated, and perhaps in no class of objects do these vulgar names obtain more generally than in *petrifications*. Even sensible persons will call these objects by names which are not in the least degree descriptive of them and which in no case belong to them. It is true, in a few instances they bear some remote resemblance to the thing specified by the name, but it is impossible they should be the thing itself. Let me give a few examples :

You often hear men say that they have found a *petrified honey-comb*, and some would denounce you as insane were you to deny it. The thing has a distant likeness to a wasp's nest, but that object was elaborated, I suspect, long before there was any thing like a wasp or a bee in existence. It is nothing more than a fossil species of *coral*, which scientific men call *syringipora caespitosa*. The fact of its being found in abundance hundreds of miles from the sea, only proves that this con-

continent, many ages ago, was covered by an ocean in which the coral insect made

——— “the living pile ascend  
 The Mausoleum of its architects,  
 Still dying upwards as their labors closed.  
 And \* \* \* \* carried on the process  
 Which out of water brought forth solid rock.”

You frequently hear some people speak of a *petrified snake*. It is an object that looks *somewhat* like a serpent coiled up, but unfortunately you can never see either head or tail, and then it must have been a very small snake, for there is usually not more than one coil. What is it? It is not a snake, but the fossilized remains of an *extinct* race of animals that inhabited shells. When I say *extinct*, I mean that they are not now found in a living state. The whole family has perished, and we find them only as fossils. They are called *Ammonites*, and derive this name from the similarity which the larger species bear (for some are two feet in diameter,) to the ram's horns which once adorned the head of Jupiter *Ammon*, one of the chief gods of the ancient Egyptians.

In some sections of our country, the people will show you not a few *petrified frogs*. Now look at the fossil and you will see that it consists of *three lobes*—that is, the back seems to be divided into three longitudinal sections with shallow furrows (I am writing for the plain reader,) running across. This is not observed in frogs. “Well, if it is not a frog, pray, Sir, what is it?” “Be patient, and I will tell you. It is a *trilobite*.” “I'm as wise as I was before—and what is a *trilobite*?” “A *trilobite* is an animal of the crustaceous or crab family. They vary exceedingly in form and size; some species not exceeding half an inch, while others are a foot in length. They show no traces of legs, hence it is inferred that they possessed soft, perishable paddles. The whole family are extinct and have been through untold ages. They have not existed since the deposition of the coal strata; no traces of their remains having been discovered in rocks of a more recent period. Nearly sixty species are known.”

Sometimes you will see sandstone hollowed out for a considerable length, which looks very much as if an immense serpent had been suddenly squeezed into it when the stone was soft and left the impression of its scales. This is thought by many people to have been really thus occasioned. It is a great mistake. Instead of being an animal, it is of vegetable origin. It is caused by the pressure on the soft sandstone, not of a snake, but of the branch of a tree, the bark of which was covered with scales very much like those of a serpent, and hence called *Lepido-*

*dendron*, or *scale tree*. This scaly appearance of the stems is produced by the separation of the leaf stalks.

In some sections, people tell you they have found a *petrified squirrel's head*. Show it to a scientific man and he will tell you that it is a fossil shell (*cucullaea vulgaris*) that looks somewhat like the head of the animal mentioned.

Not long ago I was looking at a collection of "curiosities," and I saw one object labelled "*petrified intestines of a squirrel*." Now, here is a *regular* "curiosity," thought I—the entrails of a squirrel turned into stone! Let's see! Nonsense!—it's nothing more than the shell *serpula*, which is spirally twisted and irregularly attached together, that makes it look like a bundle of petrified *hollow* worms.

A gentleman not long ago sent an object to a certain cabinet which he had labelled "*a petrified mulberry*." It was a small piece of *mamillary* iron!

Another sent a large stone with certain fossils on it, and he had marked it "*a petrified nest of snakes*." He thought here was a whole family of serpents all of a sudden turned to stone. It was a fossil seaweed, and is called in scientific language, *Fucoides Alleganiensis*,—a vegetable and not an animal.

"*Petrified bull's horns*" are often found, but instead of ever having decked the head of that animal, they once formed the inside of a shell. They look a little like the short horn of a cow, and are called *Hipparites cornu vaccinum*.

These are a few of the errors prevalent on these subjects. They have been handed down from the olden time; but the day has come when they should be corrected and abandoned. J. G. M.

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GRECIAN EDUCATION, NO. III.

Instead of rendering the boys effeminate, as was common in other parts of Greece, by permitting them to wear shoes, Lycurgus indurated them by making them go bare-foot. For mounting steep places, descending declivities, running, leaping, he thought exercise in this way a good preparation. One garment a year was all that he allowed, that luxury in clothing might not be encouraged. Thus, too, was the body habituated to the endurance of heat or cold. In regard to food, he directed such a use as might not result in repletion, or undue plethora, and at the same time accustom to some self-denial. In this way was preparation secured for abstinence, for long continued use of the same food, or for the use of any kind that might be accessible.

Physical education was very carefully attended to. Great pains were taken for the full developement of the animal system. The results of this training have not yet lost their interest, but might be profitably studied by the present age. A writer of our own country,\* who has expressed himself very decidedly against the civil polity of the Lacedæmonians, in reference to their physical training, makes the following remark: "It is much to be desired that exercises like those established by Lycurgus, running, wrestling, riding, swimming, skating, fencing, (dancing?) should be introduced into public and private education in America, which would fortify the body and invigorate the minds of youth; instead of those sedentary amusements which debilitate, and are taking entire possession of society all over the world." Education amongst the Lacedæmonians was not confined to the body, although this constituted a considerable and important part of their training. The mind, the noble part of man, was not neglected. Their great aim was to prepare their pupils for government and submission. They were to understand the government of others and of submission themselves.

After they had completed their seventh year, their education commenced. Previously to this, they remained at home. No one was exempt except the heir apparent to the throne. Deprivation of civil rights was the penalty inflicted upon the father who withheld his son.

The exemption of the heir apparent did not release him from obligation to attend to the prescribed gymnastic exercises. When the system of public training commenced the boys were classified. Each class (*αγγελη*) consisted of smaller divisions, (*βουαι* and *ιλαι*) and was superintended by a young man twenty years of age, who was called *βουαγος*. He had the most entire authority over the boys agreeably to the wrong views of the Spartans, and the choice was made of a young man (*ειρηνη*) on the ground of intelligence and firmness. The *Paidonomos* was at the head of the whole, an officer elected for his intelligence and bravery.

In order to appreciate the course of education amongst this people, says the celebrated Schwartz, we must look at the classification of the boys according to their age. The boy remained, as before stated, in his father's house till he had completed his seventh year, and consequently belonged to no *agela*, on which account he was called in Crete, where the same constitution existed, *απαγγελος*, and likewise *σκοτιος*. After this the public education (*αγωγη*) commenced, which the sons of native Spartans enjoyed, who were, on this account, called *πολιτικοι παιδες*.

\* John Adams' Defence, &c.

Dressed in under garments (*χιτων*) and provided with woolen shirts without sleeves, he remained in this class five years, then he began a more self-denying life, obtained the cloak (*ιματιον, χλαινα*), a square cloth, and was called the *τιλλος*. From the fifteenth or sixteenth year, he was called *σιδεεωνης*, after the eighteenth year *μελλειεργην*, as he approached the twentieth year he was called *προτηρης*, and after he had passed it *ειρηνη*. Hitherto amongst the *εφηβοι*, he is now ranked with the young men, called *σφαιρευς*, till he reached the age of eighty years. From this period he is considered a man, and participates in civil and military duty. His leisure is spent in the Lesche and public places, in conversation and superintendence of the young—for every citizen in Sparta is considered as a father of all. In this way his influence is exerted, till having reached the age of sixty, he is eligible to the Gerousia, and becomes the counsellor and director of the public. To proceed more directly to their instruction, it is stated in the most authentic accounts we have of them—that even from their boyhood, they were accustomed to accurate thought, correct decisions, to veracity in speech, and to express themselves laconically and to the purpose. During meals these things were not overlooked. To one was assigned some question for solution, another was required to sing. If the question was not immediately answered, or incorrectly, or unsatisfactorily, reasons were assigned, corporeal chastisement followed (such as biting the thumbs,) and that the officer might not be neglectful of his duty, some of the citizens were from time to time present, who noticing on his part delinquency in his duty, would subsequently submit him to punishment. It may be asked, what did they study? It is not to be supposed that intellectual training would take a very wide range amongst this people. The elegancies of literature they could not regard as important. It was only what they needed in the limited sphere in which they were to act, that they regarded as important. Gymnastics, music, vocal and instrumental—lyre and flute, dancing. Reading and writing were not prominent matters, they were pursued to a limited extent, but as far as was thought necessary. Grammar does not figure amongst the branches of their education. They did not consider Grammar as deserving of any special attention, and they condemned both Rhetoric and Oratory, each as a *τεχνη ανευ αλεθειας*. Arithmetic, so far as it is necessary in common life, was taught without any special system, or without any formality, in ordinary intercourse intellectually; the same may be said of Geometry. Mathematics were not pursued as a specific study. The only thing in which they were systematic was Gymnastics. There are various other interesting facts recorded in reference to these matters,

but we pass them by. In making an estimate of this course of education amongst the Spartans, it must be admitted that it accomplished the purposes for which it was intended; so far it may be regarded as deserving our commendation. As a means to a proposed end, we must admit that it reflects great honor on its author. But the question that is most important to determine is, did it accomplish what is most necessary in the education of man? Was it based on correct views of the human constitution, the design of our Creator in placing us here, and the highest interests of man? When examined in this way, although we cannot refuse to it some commendation, we must pronounce it vitally defective considered as a whole. It made hardy, brave soldiers, patriots, and good citizens, but it did not produce philosophers, and poets, and historians. It did not, it is true, aim at these things, and therefore we should not look for them, but was it not a great defect that it did not aim at what contributes so much to exalt human nature, and to confer lasting benefits upon the race of man? We admire their devotion to truth, their hatred of falsehood. No virtue is more necessary to man than this. Without it, the social edifice cannot stand; without it, human happiness is at an end.

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#### COMMON THINGS, NO. IV.

The four modes by which the decomposition of organized matter may be retarded or prevented, are the chemical changes of the azotised substances, the abstraction of oxygen, reduction of temperature, and abstraction of water.

1. The chemical change of the nitrogenised substance may be effected by heat, acids, tannin, volatile oils, earthy and metallic salts, as has been explained.

2. As putrefaction cannot proceed without the presence of oxygen, any mode by which the absorption of this gas can be effected will furnish the means of arresting or preventing decomposition. It is not sufficient, however, to remove the oxygen from the air which surrounds the body, that which is diffused through the body itself must be expelled, as this is sufficient generally to excite fermentation.

The easiest way of effecting this expulsion is by a moderate heat which removes a large part of the air and leaves the rest in a condition less liable to change.

Oxygenation may also be prevented and de-oxygenation sometimes effected by contact with substances having a strong affinity for this gas. Chemistry furnishes us with the names of several: amongst them sulphurous acid is perhaps the most simple and efficacious, and it can easily

be procured by the combustion of sulphur. Butchers' meat enclosed in a vessel filled with this gas absorbs it and remains for a long time proof against corruption. Oils, fats, syrups, &c. and in general any thing that will prevent contact with the air, may be used to prevent or retard the putrefaction of boiled meats or fruits. Charcoal powder is also efficacious, as it excludes the air and condenses the oxygen.

3. Putrefaction cannot proceed without a certain degree of heat. Frozen meat, it is well known, may be preserved an indefinite length of time, and animals enclosed in ice will remain unchanged for ages.—Hence the efficacy of ice houses, cool cellars, &c. in warm or temperate climates.

4. Moisture is the last essential to the putrefactive process, even when the albumen of animal tissues is not coagulated if the moisture is removed the tendency to decomposition is destroyed. Albumen dried at a temperature of about  $140^{\circ}$  may be preserved for any length of time, and may be redissolved with its valuable properties unchanged. The ordinary modes of preserving fruits, flesh, &c., depend for their efficacy entirely upon the principal of removing the moisture. Meats, for example, are brought in contact with salt which from its strong attraction for water deprives them of their moisture or replaces it by a saline solution which is less liable to change. Sugar acts in a similar way in the preservation of fruits, converting the water into an unchangeable syrup. Dry charcoal powder newly calcined will also absorb moisture, and furnish the means of preserving flesh for a long time. Alcohol preserves animal substances by abstracting the water which is essential to putrefaction.

Specimens for cabinets are frequently preserved in alcohol, and experience has proved that the mode is efficacious, expense may be diminished by the use of any common liquor as gin or whiskey, which, with the addition of a little creosote, can be made to answer well.

It is said that water saturated with sulphurous acid will afford a cheap, and with the addition of a little creosote, a very efficacious substitute for alcohol.

The ancient Egyptians used wood vinegar, which contains creosote, in the process of embalming.

We will conclude with a few useful applications of the principles that have been explained, for which we are indebted chiefly to Dr. Ure.

Flesh may be preserved—1. By cutting in thin slices, immersing in boiling water, and drying at a temperature of  $122^{\circ}$ .

2. By smoking.—The quality of the wood has an influence on the smell and taste of the meat. Juniper and aromatic herbs impart their

own flavor to some extent. By covering with bran the soot will not adhere.

3. By salting.—To the salt one-sixteenth of nitre and one-thirty-second of sugar should be added. The meat should be subjected to heavy pressure, and no water added, unless the brine obtained in the act of pressing should be insufficient to cover it. When a pickle is necessary it may be composed of 4 lbs. salt, 1 lb. sugar, 2 oz. saltpetre, and 2 gals. water.

4. By pickling.—The vinegar acts by coagulating the albumen; it should be as strong as possible.

Meat may be kept for months by covering with oil or fat of some kind, or it may be immersed in water which has been deprived of its air by boiling, and covered with oil to prevent contact with the atmosphere.

It is asserted that fish may be kept alive in a torpid state by pouring a little brandy into them and packing them in straw.

Eggs may be preserved by placing them for five minutes in water heated to  $140^{\circ}$  to expel the air, and then coating them with oil or gum arabic. Milk of lime is also recommended. Eggs coated with gum arabic and packed in charcoal, will keep good for a year. For sea voyages the albumen and yolk may be beaten together and dried with a moderate heat; when used a portion is dissolved in water.

Grain and flour may be preserved any length of time if kiln-dried and packed in tight vessels.

Fresh fruits should be carefully picked in dry weather and before fully ripe, they should be exposed for eight or ten days to a dry air and then packed, without touching, in dry straw or saw dust.

A very efficacious mode of preserving meats, fowls, &c. for exportation, consists in parboiling it in the smallest quantity of water, so as to form a very rich soup. The whole is then placed in tin canisters with spices, and the tops soldered on leaving only a very small opening in each, the contents of the canisters are then boiled again, and while filled with steam the openings closed with solder, all access of air is thus prevented, and the contents of the canisters will keep fresh and good for years. Turtle is exported in this way from the West Indies.

Foul water may be purified by passing it through charcoal or by adding a little alum, and sulphate of iron or chlorine.

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#### BIOGRAPHY OF LINNAEUS.

CLIFFORT proposed to Linnaeus to make a visit to England for the purpose of connecting himself with the naturalists of that country, and to

procure the American plants they were endeavoring to cultivate in London. Linnaeus was delighted with the proposition, and left Amsterdam with letters to many distinguished individuals. He was cordially welcomed, and received much attention especially from Drs. Dillenius and Martyn. Boerhaave had introduced him to Sir Hans Sloane in the following complimentary epistle: "The bearer of this letter is alone worthy of seeing you—alone worthy of being seen by you. He who shall see you both together, will see two men whose like will scarcely ever be found in the world." Linnaeus returned to Hartecamp and remained with Cliffort during a part of the next year. Here he sent to the press six original works which had been prepared before, and thus spread his botanical reform over Europe.

At the close of 1737, Linnaeus desired to return to his native country and his betrothed bride. He declined several liberal offers from the Dutch, proposing situations both at home and abroad. After a severe attack of fever, the result of his anxiety to return home and close application, he went to Paris and visited the herbaria of Tournefort, Vaillant and Surian. Thence to Rouen whence he set sail for his native land. At Stockholm he commenced the practice of medicine, but with very indifferent success, until a prescription for a pulmonary affection which resulted favorably brought him into notice. The Queen being afflicted with a cough and having heard of the cure resulting from the prescription of Linnaeus, sent for him and was speedily cured by him. His fortune was now made. The tide had at length turned in his favor. In adverting to this period in a letter to Baron Haller he says—"No patient could be cured without me; from four in the morning till late at night I visited the sick, spent nights with them and earned money. Alas! said I, *Æsculapius* affords all that is good, but *Flora* yields only *Siegesbecks*."\* On the establishment of the Royal Academy of Sciences, Linnaeus was appointed President. In 1741, he was appointed joint Professor of Physic at Upsal, and physician to the king with Rosen, his old enemy. Rare plants were sent to him from all parts of the world. Of these he published a catalogue a few years after, from which it appeared that he had introduced eleven hundred new species exclusive of his Swedish plants and their varieties. The University as a school of physick rapidly grew in credit, and numbers of German students resorted to it. His honors increased annually and with them his emoluments. He was invited to Madrid by the king of Spain upon a liberal pension and with letters of nobility. The monarchs of France, Russia, Prussia, Denmark and Sardinia, sent him handsome presents, besides the highest

\* *Siegesbeck* was a violent opposer of his new system.

compliments. After successive attacks of apoplexy his mind became impaired and his body gradually sinking, he died on the 11th of January, 1778, greatly and universally lamented.

Besides other works Linnaeus published *Flora Suecica*, *Fauna Suecica*, *Materia Medica*, *Genera Morborum*, *Philosophica Botanica*. In 1753, he published his *Species Plantarum*, every plant arranged on his sexual system. This work Haller calls "maximum opus et æternum." The impulse which was given to the study of botany, and it is mainly referable to Linnaeus, may be inferred from the fact that whilst his own herbal which he said contained only eight thousand plants was "without contradiction the greatest that ever was seen," we now have collections containing from thirty to forty thousand species, and as many as eight thousand were received in one year.

Linnaeus was of diminutive stature, his look keen and piercing but his ear was unmusical. Nature had highly endowed his mind. His imagination was brilliant, his memory retentive, and his industry untiring. He had a perfect command of the Latin language in which he wrote. His style was concise though often illuminated by lively sallies of imagination. In the midst of all his prosperity he never forgot his Maker, and was ever ready to own the hand which had showered such blessings upon him. In a memoir which he drew up, of the most remarkable incidents of his life, he concludes with these words: "The Lord was with thee wherever thou didst go."

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#### HOW SNAKES CAPTURE THEIR PREY.

I was riding along the other day with my little son in a carriage, when, just as we were descending a sharp hill, our attention was arrested by a considerable rustling in the dry brush, at one side of the road a considerable distance below us. I at first thought that it was a squirrel amusing himself in that way, but was soon surprised to see a large frog coming up the hill with astonishing speed and leaping through the air to a great distance. This one was soon followed by another, and I began to wonder what could have induced them to leave the stream a short distance below and make such an excursion into the upper regions. But I was soon relieved upon this point, for the second frog was rapidly followed by a large black-snake, some two or three feet long, his eyes glistening and every muscle strained, evidently intent upon capturing the poor animal before him. The interposition of my carriage, caused the frog to turn across the hill, at right angles to his former course. But the wary eye of the snake was upon him, and he too turned in the same

direction, although my horse was by this time considerably nearer to him than it had been to the frog. I pulled in my horse, somewhat uncertain whether I ought to give the snake a fair chance for his dinner or interpose for the preservation of the poor frog's life; but before I could decide, my horse was between the snake and the frog. The former was evidently excited, and seemed to have some notion of taking vengeance upon the horse, whose horny hoofs opposed so formidable a barrier in the way of his progress. He lay in the way with erect head and hissing tongue, and if I had not known that this species of snake (Coluber) was never venomous, I should have been somewhat alarmed. But finding the road impassible, his snakeship turned up the hill in another direction, whilst the terrified frog descended to the creek below.

I infer from this, that snakes have no power of fascination over frogs, but are compelled to capture them by surprise, or by a fair chase.

W. M. R.

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#### THE SPIRIT WINGS.

Watch thou yon bird, whose bending wings  
 Undrooping on their upward way,  
 Move swiftly in their vibratings,  
 As wide the air-surge round she flings;  
 Away, away, away, away,  
 Till the tingling sunlight  
 Flows into her eyes,  
 Where no cloud enfolds the bright  
 Bosom of the skies:  
 Still away, away, away.  
 See, see! swift through the gleaming sky,  
 Two guardian birds beside her fly:  
 Till, the chrystal zenith near,  
 From the aching sight she's riven,  
 Melts away into the sphere,  
 And is a part of Heaven!

Then who dare say, that, when the wings,  
 Damp-folded in the *soul's* first sphere,  
 Open in glory, as it springs  
 To godlike hopes and godlike things,  
 That then the face shall pale in fear?  
 That then the heart shall force the tear?  
 No life to watch, we cannot die;  
 No gloom to dread, we cannot sigh;  
 God's life, our life; God's throne, our throne,  
 God's boundless heritage our own—  
 All these are thine—Eternity!

For, if my soul should close her eyes  
 To dream her dream of extacies,  
 In the spiritual land  
 Where the unfleshed sleepers go,  
 How dare ye to call this death!  
 'Tis but to exhale the breath,  
 • And, upon its wings, to fly  
 With the fire-helmed angel baud  
 Up into infinity,  
 Wrapt into divinity!

A. R. A.

## FRAGMENTS ON THE BEAUTIFUL.

That the emotion of the beautiful is eminently an intellectual one is shown by the fact that the only senses at all connected with its impressions are those confessedly pertaining to the higher faculties of the soul. Hearing and seeing are pre-eminently the intellectual senses, and to their office by universal consent the application of the term beautiful is confined. We speak of a beautiful sight, but not of a beautiful taste, of a beautiful sound, but not of a beautiful feeling.

The inferior senses, which man has no power of using in a more exalted manner than the brutes with whom he shares them—these are incapable of becoming the medium of the beautiful. The two senses which are the avenue to his rational, his disinterested nature, these engross the entire use of the mind, by so universal a consent, as to enable us to appeal to this fact as strong confirmation from the law of nature. How much, too, of the beautiful, most vivid in its character, is purely ideal. The superstitions, the legends, the tales of fairy-land, the song of the bard, the dream of the romancer, these dwell in the mind's temple, *invisible* deities, but not the less powerful, because the hand is unseen that executes their will. And the same mind fluctuates in different moods in its conception of beauty. "What can be more beautiful than a grape," says Cicero, in a burst of enthusiasm, and possibly when somewhat stimulated by the juice of the fruit he praises. But in a happier and higher mood he exclaims—"Who does not admire the splendor and beauty of virtue! Nothing is more lovely than virtue, nothing more beautiful." Just as the natural tendencies of disposition float backward and onward, do the emotions of the beautiful fluctuate. When it is in our nature it will find its way through all that bears it down. Where it is not, enchanting sights, or charming sounds can never awake it.—With it we may glow with a divine enthusiasm on earth, without it we should be unmoved on the verge of heaven. Like the angel of Milton,

who in the very presence of Jehovah, was cursed with the lust of wealth,  
we might more admire

——— “heaven’s pavement, trodden gold,  
Than aught divine or holy else enjoyed  
In vision beatific”—

We may notice two sisters reared under the same external influences, but how widely do they differ in their position in the world of taste! The one will become decidedly domestic; to her the roasting of a piece of beef may be the grandest of achievements. Her philosophy will be confined to that which we are told is necessary to the roasting of eggs. The gridiron and the frying-pan make to her the richest music; and her name descends throughout the generations of the family as the greatest of housewives. The taste of her tarts lingers in many a mouth, and the very *remembrance* of her mode of preparing onions brings tears to sympathetic eyes long after she has passed away.

But in the other, by the impulsive influence of a mind of a different cast, a character widely different is formed. The unseen she is most anxious to look at. The charming page of the novelist, the rich legend of the romancer, the glowing numbers of the poet, subdue her by their occult music. Her very curls are put up in select poetry from the newspapers, the only *use*, we believe, which it has ever been made to subserve. She looks with the eye of imagination at nimble fairies dancing barefoot in the moonlight, until she almost thinks herself a fairy with the attendant moonlight and bare feet; at least this class of ladies has been charged with forgetfulness of the fact, that in this perverse and unromantic world, there are such things as stockings, or, at least, that yarn is not eternal.

We behold in men differently constituted an illustration of the same truth. The extreme on the one side terminates in the hopeless utilitarian, on whose very grave nothing but pumpkins will grow, and on the other shows us the victim of ill regulated and fierce enthusiasm which consumes the spirit in which it dwells.

And in the department of the affections our principle is upheld by facts no less striking. Whatever acts on them, acts on our ideas of beauty. So soon as our feelings lose their tone, they cease to charm, and in extreme cases even become absolutely hateful. Thus Hamlet, speaking of the effects of his profound distress:—“Indeed it goes so heavily with my disposition, that this goodly frame the earth seems to me to be a sterile promontory; this most excellent canopy the air, look you; this brave o’erhanging firmament, this majestical roof fretted with golden fire,

why it appears no other thing to me than a foul and pestilent congregation of vapors!"

On the other hand where the feelings have from any reason more than their ordinary tone, objects afford delight which in another state would convey no pleasure. In the exulting spring of spirits experienced after leaving the room where we have been long confined by sickness, the most trifling thing which ordinarily would not detain the eye for a moment, now has elegance and grace.

“The meanest floweret of the vale,  
The simplest note that swells the gale,  
The common sun, the air, the skies,  
To him are opening Paradise.”—GREY.

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LE MAOUT'S BOTANY.

Leçons de Botanique par Dr. Le Maout. 2 vols. Paris.

I am sure I shall receive the thanks of those readers of the Record and Journal who are about to devote themselves to the study of Botany, and even of those who have already pursued it, (if the work has not fallen under their notice) by calling their attention to the charming book of Dr. Le Maout. It is an elementary work on Botany divested of all that dryness and stiffness hitherto supposed to be inseparable from works of this class. To read an elementary book on science and particularly on Botany, not only without labor but with positive pleasure, sounds like a paradox, and so I should ever have considered it had not the meritorious work under notice fallen into my hands. You might be induced to suppose from these remarks that Dr. Le Maout had written one of those superficial and fanciful books, one of those sickly and mawkish romances of science, unfortunately too common at the present day; but not so—his work teaches the profoundest doctrines of this beautiful science with all those recent and wonderful developments based upon the ingenious observations of the celebrated Goethe, which so justly place Botany in the rank of the exact sciences. All those most intricate and curious adaptations of Nature, the development of which casts such a charm over modern Botany, are treated by the author with a simplicity, perspicuity and elegance that cannot fail to fascinate his readers. As a specimen of the pleasant manner in which the subject is treated, the following extract was translated by a lady who has shared my delight in the book:

“About the middle of the last century, Bernard Jussieu, Professor of Botany, on examining the trees confided to his care in the Garden of

Plants, observed that a Pistachio tree which till then, had blossomed every year, but had never produced fruit, was now about to yield; the fruit being already formed. There was not in all the garden a Pistachio tree bearing staminate flowers; the neighborhood was searched, none was found, yet the blossoms of the tree about to bear fruit must have received pollen, and whence could it have come? Fruit formed by seeds developed without the aid of pollen!—this was indeed a rude check to the theory of the fecundation of flowers, at that time not so firmly established as at present. The great botanist, much grieved at the fruitlessness of his search, perseveringly affirmed that there existed somewhere in the vicinity a Pistachio-tree having staminate flowers, and that it was this which had caused the tree in the Garden of Plants to bear fruit; still it was necessary to discover it. He then resolved to apply for aid to the Police, whose agents were immediately dispatched with an exact description of the concealed individual. These persons, commencing at the garden, gradually enlarged the circle of their search, until they at length discovered near the Luxembourg, in a corner of the nursery grounds of the Chartieux, a little Pistachio tree with staminate flowers, which had this year blossomed for the first time. The pollen must therefore have passed through the air along the border of the faubourg St. Germain, the faubourg St. Jacques, and the faubourg St. Marceau to search for the pistillate flowers on the Pistachio tree in the middle of the Garden of Plants. It is difficult to admit that the wind could have transported so far a small quantity of pollen, without dispersing it every where else rather than upon the narrow surface of the flower that needed it. We must therefore seek another auxiliary to its fecundation.

You have no doubt often amused yourself with sucking the bottom of the flowers of the honeysuckle, jessamine, lilac, or primrose, to extract the sweet juice which is there found in abundance. In thus indulging yourself you have committed a robbery on insects that have no other nourishment: these are butterflies, bees, and other often exceedingly small insects, that you may see couched in the cup of the flower, where they find at the same time, aliment and a home.

It is to this nectar that we owe the honey of the bee; and it is distilled by organs which we shall soon study. It is contained in the Gilly-flower, the Melon, and most other flowers, and this attracts the insect suckers. Do you believe that the flower furnishes them gratis with food and shelter? See the bee when it gathers its harvest—while it eagerly pumps the nectar, its body, bristled with hairs, becomes charged with the pollen amidst which it glides, and when it takes flight it scatters a part of the pollen on the flower, then goes to pillage other plants, and

always in plunging into their flowers, rubs against the stigma or summit of the seed-bearing organ. Observe now, it is at the time when the anthers shed their pollen, that the stigma bedews itself with a viscid moisture, and it is also at this time that the nectar is distilled which invites the insects to their repast. Is this coincidence of no importance? Does it not tempt you to believe that these insects, cotemporaries of the flowers, are the grateful messengers, who, to repay the hospitality received, distribute, in the hotel where they next arrive, the pollen collected in that they have just left?

But what purpose is served by the fragrant and painted corolla of the flower? This expands when the anthers yield their pollen, when the stigma becomes humid, when the nectar is distilled, and when there are insects to drink it. It needs no great sagacity to conclude from this union of circumstances, that the corolla, by its form, its shades, and its odour, is designed to indicate to the insects the reservoir whence they may draw the syrup they love: it is the label upon the vase containing the precious nectar; the invariable uniform of all flowers of the same species, and the insect voyagers readily recognize by its brilliant colors the balmy caravansary where they delight to revel.

Insects, then, are valuable auxiliaries in the fecundation of flowers, either by transporting the pollen from one plant to another, or by aiding in its dispersion upon the stigmas of the same flower: and for this reason it was necessary, in the experiment upon the melon of which we have spoken, to cover the plant with a fine gauze to prevent the access of insects. Without this precaution, pollen might have been carried to a flower which the experimenter wished to be deprived of it, and thus the experiment rendered doubtful.

We are indebted to Conrad Sprengle, a German, for a knowledge of the part performed by the corolla and the nectar in the history of the flower. This additional link in the great chain that unites the vegetable and animal kingdoms, he discovered by long and close observation.—With a patience truly German he passed entire days in the fields, crouched at the foot of a plant with his eye constantly fixed on the flower, whose anthers were not yet opened; at length, after a silent and motionless watch, often prolonged till evening, he saw the aerial messenger arrive, whose manœuvres he was so anxious to observe. The insect, after some preliminary evolutions, plunged into the flower and made its repast. When it again issued forth, Sprengel saw the grains of pollen adhering to the stigma and returned home contented with his day's labor.

Since the appearance of the great Linnaeus we more frequently meet with these noble enthusiasts in the cause of science to whom sixteen

hours exposure to the sun seem but a minute when employed in observing the marvels of creation.

It would not be correct to say that the corolla of flowers is merely designed to point out the plant to insects. Nature knows too well how to connect economy of means with magnificence of results, to permit us to suppose that the same organ may not serve several ends. It is evident, for example, that the corolla is like the calyx, designed to protect the central parts of the flower.

We shall hereafter study its other functions, at present we have only proved those that are most important and most worthy of your attention."

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COLLEGE RECORD.

*Statistics of Penn. College.*—The Catalogue of this Institution for the year 1845, (the thirteenth since its organization,) furnishes us with the following results:—Graduates 88; Seniors 4; Juniors 19; Sophomores 19; Freshmen 20; Partial Course 9; Preparatory Department 77; making the total of 148 in connection with the Institution during the year.

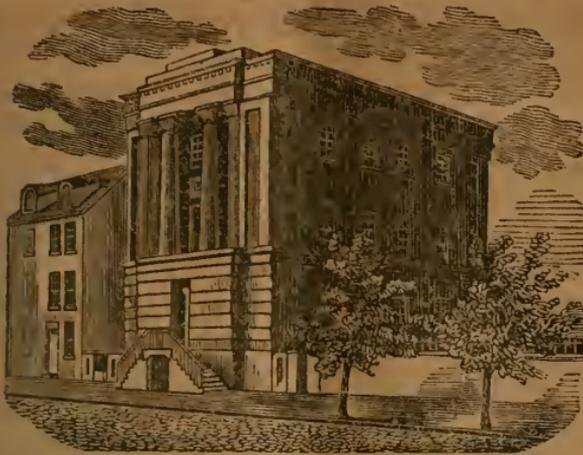
*College Commencement.*—The Annual Commencement of Penn. College takes place on Thursday the 18th of September. On the afternoon of the day preceding, the address before the Literary Societies will be delivered by PROF. REYNOLDS. The address before the Alumni will be delivered on Wednesday evening, by Rev. CHAS. P. KRAUTH, of Baltimore, Md.

On Tuesday the 16th inst., several addresses will be delivered by the students of the Theological Seminary, and a discourse before the Alumni of the Seminary by the Rev. CHAS. F. SCHAEFFER, of Harrisburg, Pa.

*The Record and Journal.*—Subscribers are informed that the first and second numbers of the Journal are exhausted, so that they cannot be supplied. Several who have forwarded the money for subscription within the last month, will receive copies so soon as we obtain a few numbers which Postmasters have informed us remain uncalled for in their offices, though we are happy to say that not more than half a dozen such cases have yet been reported to us. We mention this circumstance in order to inform our friends who have favored us with their orders, why they have not been filled more promptly.

# PENNSYLVANIA MEDICAL COLLEGE,

Filbert above Eleventh street, Philadelphia, Pa.



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D. GILBERT, M. D.—*Prof. of Principles and Practice of Surgery.*

W. L. ATLEE, M. D.—*Prof. of Medical Chemistry.*

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## GETTYSBURG FEMALE SEMINARY.

At this Institution is taught all that is considered essential to a finished education, including Instrumental and Vocal Music, Drawing, Painting, Languages, Ornamental Needle Work, &c.

The boarding department will at the next session be removed to the pleasantly located residence of the Principal, known as Oakridge; the the pupils will then be members of his family.

Several gentlemen of distinguished literary and scientific attainments will deliver frequent addresses throughout the course, on subjects of interest and importance.

The institution is well supplied with experienced and successful teachers, and with a valuable and increasing collection of Philosophical and Chemical apparatus, Minerals, Shells, Zoological specimens, &c.

H. HAUPT, *Principal.*

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Gettysburg, August, 1845.

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The summer session commenced on the 22d of May, with the accession of over forty new Students.

## Acknowledgements of Donations to the Cabinet of the Linnean Association of Pennsylvania College.

August, 1845. From *Dr. S. S. Schmucler*, (Gryphæ) found in a large deposit near the Bedford Springs; Indian bones found in the remains of an aboriginal burial ground near Mt. Airy, Shenandoah co. Va.; Indian antiquity, (a remarkable stone cut out in the shape of a wheel) ploughed up in the bottom lands on the banks of the Shenandoah, Va.

2. From *Mr. G. Nixdorf*, one coin.
3. From *Mr. J. Kuln*, tortoise in spirits.
4. From *Mr. W. Loughridge*, a number of specimens of marble.
5. From *Prof. M. L. StoeveK*, one rare silver coin.
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TERMS OF THE RECORD AND JOURNAL. *One Dollar per annum in advance.*

Address—"Editors of the Record and Journal, Gettysburg, Pa."

THE  
**LITERARY RECORD AND JOURNAL**

Of the Linnaean Association of Pennsylvania College.

OCTOBER, 1845.



CONDUCTED  
 By a Committee of the Association.

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1½ sheet, periodical—Postage, 2½ cents, to any distance within the Union.

NEINSTEDT, PRINTER, GETTYSBURG.



THE LITERARY  
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OF THE LINNÆAN ASSOCIATION OF PENNSYLVANIA COLLEGE.

VOL. I.

OCTOBER, 1845.

No. 12.

CATALOGUE OF BIRDS FOUND IN THE NEIGHBORHOOD OF CARLISLE,  
CUMBERLAND COUNTY, PA.

BY S. F. BAIRD.

The following list embraces the species of birds which have been collected during the last five years, and with very few exceptions in a circle of but few miles radius. None are admitted without having been actually killed and preserved; in no case have any been inserted on the authority of others. A residence nearer the Susquehanna would no doubt have enabled us to increase the number considerably, as we have heard of several not in this list which have been killed about Harrisburg. Some of these will be found in a catalogue of additional species procured at Marietta, Pa., most, if not all of which, touch on our eastern border.

The nomenclature employed is based on that of Prince Bonaparte, in his lists of the birds of Europe and North America, 1838, 1842, with the addition, however, of the authority for each species, and various alterations called for, by a strict regard to the law of priority. The name immediately succeeding each species is that of its first describer, and if in parentheses, under a different genus. The second name is his who first placed that particular specific appellation under its present genus. A (†) prefixed, shows that the bird breeds here.

† *Cathartes aura*, (L.) Ill. Turkey buzzard. Rather rare. Summer.

*Haliaeetus leucocephalus*, (L.) Sav. Bald eagle. Rare. Resident.

*Pandion carolinus*, (Gm.) Bon. *P. haliaetus*, Aud. Fish hawk. Rare. Resident.

*Archibuteo sancti johannis*, (Gm.) Gray. *Buteo lagopus*, Aud. Rough legged hawk. Very rare. Winter.

† *Buteo borealis*, (Gm.) Bon. Red tailed hawk. Common. Resident

“ *lineatus*, (Gm.) Bon. Red shouldered hawk. Common. Res.

“ *pennsylvanicus*, (Wils.) Bon. Broad winged hawk. Rare.

- Falco columbarius*, L. Pigeon hawk. Rare. Autumn.
- † *Cerchneis sparverius*, (L.) Boié. *Falco s.* Aud. Sparrow hawk. Very common. Resident.
- † *Accipiter fuscus*, (Gm.) Bon. *Astur f.*, Aud. Sharp-shinned hawk. Abundant. Resident.
- † *Astur cooperi*, Bon. Cooper's hawk. Common. Resident.
- Strigiceps uliginosus*, (Wils.) Bon. *Circus cyaneus*, Aud. Marsh hawk. Rare. Spring, autumn.
- Nyctea candida*, ( ) Bon. *Surnia nyctea*, Aud. Snow owl. Rare in very cold winters.
- † *Scops asio*, (L.) Bon. *Bubo a.*, Aud. Screech owl. Common. Res.
- † *Bubo virginianus*, (Gm.) Cuv. Great Horned owl. Common. Res.
- † *Otus americanus*, Bon. *O. vulgaris*, Aud. Long eared owl. Rare. Resident.
- “ *brachyotus*, (L.) Short eared owl. Rather common. Winter.
- Ulula nebulosa*, (Forst.) Cuv. *Syrnium nebulosum*, Aud. Barred owl. Common.
- Nyctale acadica*, (Gm.) Bon. *Ulula a.*, Aud. Saw whet owl. Very rare.
- † *Antrostomus vociferus*, (Wils.) Bon. *Caprimulgus v.*, Aud. Whippoorwill. Abundant in mountains. Summer.
- † *Chordeiles virginianus*, (Briss.) Sw. Night hawk. Very com. Sum.
- † *Acanthylis pelasgia*, (L.) Boié. *Chaetura p.*, Aud. Chimney bird. Very common. Summer.
- † *Progne purpurea*, (L.) Boié. *Hirundo p.*, Aud. Martin. Com. Sum.
- † *Chelidon bicolor*, (Vieill.) Bon. *Hirundo b.*, Aud. White bellied swallow. Common. Spring and autumn.
- Cotyle riparia*, (L.) Boié. *Hirundo r.*, Aud. Bank swallow. Abundant. Spring and autumn.
- † “ *serripennis*, (Aud.) Baird. *Hirundo s.*, Aud. Rough-winged swallow. Abundant. Summer.
- † *Hirundo fulva*, Vieill. Cliff swallow. Abundant. Summer.
- † “ *rufa*, Gm. *H. rustica*, Aud. Barn swallow. Very abund. Sum.
- † *Ampelis carolinensis*, (Briss.) *Bombycilla c.*, Aud. Cedar bird. Abun. Some resident.
- † *Ceryle alcyon*, (L.) Boié. *Alcedo a.*, Aud. King fisher. Com. Some res.
- † *Trochilus colubris*, L. Humming bird. Abundant. Summer.
- † *Sitta carolinensis*, Briss. White bellied nuthatch. Abund. Resident.
- “ *canadensis*, L. Red bellied nuthatch. Rare. Winter.
- † *Certhia americana*, Bon. *C. familiaris*, Aud. Brown creeper. Com. Winter. Some resident.
- † *Mniotilta varia*, (L.) Vieill. Black and white creeper. Ab. Summer.

- † *Thryothorus palustris*, (Wils.) Bon. *Troglodytes p.*, Aud. Marsh wren.  
Rare. Summer.
- † “ *bewicki*, (Aud.) Bon. *Troglodytes b.*, Aud. Bewick’s wren.  
Rare. Summer.
- † *Troglodytes aedon*, Vieill. House wren. Abundant. Summer.  
“ *hyemalis*, Vieill. Winter wren. Common. Winter.
- † *Sialia wilsonii*, Sw. Blue bird. Abundant. Summer.
- † *Turdus migratorius*, L. Robin. Very ab. Summer. Some resident.
- † “ *mustelinus*, Gm. Wood thrush. Rather common. Summer.  
“ *solitarius*, Wils. Hermit thrush. Rare. Spring, autumn.  
“ *wilsonii*, Bon. Wilson’s thrush. Rather common. Spring, aut.  
“ *olivaceus*, Giraud. Olive-backed thrush. Abundant. Summer.
- † *Mimus polyglottus*, (L.) Boié. *Orpheus p.*, Aud. Mocking bird. Very rare. Summer.
- † “ *rufus*, (L.) Bon. *Orpheus r.*, Aud. Brown thrush. Ab. Sum.
- † “ *felivox*, (Vieill.) Bon. *Orpheus carolinensis*, Aud. Cat bird.  
Abundant. Summer.
- † *Anthus ludovicianus*, Licht. Titlark. Common. Spring, autumn.
- † *Regulus satrapa*, Licht. Golden crowned wren. Ab. Aut. wint. spring.  
“ *calendula*, (L.) Licht. Ruby crowned wren. Ab. Aut. spring.
- † *Parus atricapillus*, L. Black cap titmouse. Abundant. Resident.
- † “ *bicolor*, L. Tufted titmouse. Abundant. Resident.
- † *Sylvicola americana*, (Gm.) Blue yellow back warbler. Rare. Spr. aut.  
“ *coronata*, (L.) Yellow rump warbler. Very common. Spring, aut.  
“ *ptechia*, (L.) Yellow red poll warbler. Rare. Spring, aut.  
“ *maculosa*, (Gm.) Sw. Black and yellow warbler. Ab. Spr. aut.  
“ *maritima*, (Wils.) Cape May warbler. Rare. Spring, aut.  
“ *virens*, (Gm.) Black-throated green warbler. Ab. Spring, aut.  
“ *blackburniae*, (Gm.) Blackburnian warbler. Ab. Spring, aut.
- † “ *icterocephala*, (L.) Chestnut-side warbler. Very abundant some seasons, Summer.  
“ *castanea*, (Wils.) Bay breast warbler. Common. Spring, aut.  
“ *striata*, (Forst.) Sw. Black poll warbler. Very ab. Spring, aut.
- † “ *pinus*, (Wils.) Pine creeping warbler. Rare. Summer.
- † “ *aestiva*, (Gm.) Yellow poll warbler. Abundant. Summer.
- † “ *canadensis*, (L.) Black-throated blue warbler. Rather common.  
Summer.  
“ *cœrulea*, (Wils.) Cœrulean warbler. One specimen, spring 1843.  
“ *agilis*, (Wils.) Connecticut Warbler. One male, in spring of 1845.
- † *Trichas marilandica*, (Wils.) Maryland yellow throat. Abundant in mountains. Summer.

- Trichas philadelphia*, (Wils.) Mourning warbler. Rare. Spring, aut.
- † *Helinaia vermivora*, (Gm.) Aud. Worm-eating warbler. Rare. Sum.
- † “ *solitaria*, (Wils.) Aud. Blue wing yellow warbler. Rare. South mountain. Summer.
- † “ *chrysoptera*, (L.) Aud. Golden wing warbler. Very rare. South mountain. Summer.
- “ *peregrina* (Wils.) Aud. Tennessee warbler. Abundant in autumn of 1843. Once in Spring.
- † “ *rubricapilla*, (Wils.) Aud. Nashville warbler. Abundant in mountains in summer.
- † *Seiurus aurocapillus*, (L.) Sw. Golden crowned thrush. Ab. Sum.
- † “ *noveboracensis*, Bon. Water thrush. Abundant. Summer.
- † *Myiodiocytes mitratus*, (Gm.) Aud. Hooded warbler. Ab. in S. mt. Sum.
- “ *canadensis*, (L.) Aud. Canada flycatcher. Abund. Spring, aut.
- “ *pusillus*, (Wils.) Baird. *M. wilsonii*, Aud. Green black-cap flycatcher. Abundant. Spring, autumn.
- Setophaga ruticilla*, (L.) Sw. *Muscicapa r.*, Aud. Redstart. Ab. Spring, autumn.
- Tyrannula minima*, Baird. *Muscicapa m.*, Aud. Abund. Spring, aut.
- “ *flaviventris*, Baird. *Muscicapa f.*, Aud. Abundant. Spring, aut.
- “ *trilli*, (Aud.) *Mus. t.*, Aud. Abundant. Spring.
- † “ *virens*, (L.) *Mus. v.*, Aud. Wood Pewee. Abundant. Summer.
- † “ *fusca*, (Gm.) *Mus. f.* Aud. Pewee. Abundant. Summer.
- † “ *crinita*, (L.) *Mus. c.*, Aud. Great crested flycatcher. Ab. Sum.
- Tyrannus borealis*, Sw. *Mus. Cooperi*, Aud. Olive-side flycatcher. One procured.
- † “ *intrepidus*, Vieill. *Mus. i.*, Aud. Ring bird. Abundant. Summer.
- † *Icteria viridis*, (Gm.) Bon. Chat. Common in South mountain, Sum.
- † *Vireo flavifrons*, Vieill. Yellow-throated vireo. Rare. Summer.
- † “ *solitarius*, (Wils.) Vieill. Solitary vireo. Abundant in spring, rare in summer.
- † “ *gilvus*, (Vieill.) Bon. Warbling vireo. Abundant. Summer.
- † “ *olivaceus*, (L.) Red-eyed vireo. Abundant. Summer.
- Lanius borealis*, Vieill. Butcher bird. Rare. Winter.
- † *Cyanocorax cristatus*, (L.) Boie. *Garrulus c.*, Aud. Ab. Resident.
- † *Corvus americanus*, Aud. Crow. Abundant. Resident.
- “ *cacalotl*, Wagler. *C. corax*, Aud. Very rare. Resident.
- † *Quiscalus versicolor*, Vieill. Crow blackbird. Abundant. Summer.
- Scolecophagus ferrugineus*, (Gm.) Sw. *Mus. f.*, Aud. Rusty blackbird. Abundant. Spring, autumn.
- † *Sturnella ludoviciana*, (L.) Bon. Lark. Abundant. Many resident.

- † *Icterus baltimore*, (L.) Golden robin. Abundant. Summer.
- † “ *spurius*, (L.) Orchard oriole. Common. Summer.
- † *Agelaius phoeniceus*, (L.) Vieill. Swamp blackbird. Abundant. Sum.
- † *Molothrus peccoris*, (Gm.) Sw. Cow bird. Abundant. Summer.
- Dolichonyx oryzivorus*, (L.) Sw. Reed bird. Abundant. Spring, autumn.
- † *Guiraca coerulea*, (L.) Sw. *Coccyborus coerulcus*, Aud. Blue grosbeak.  
Rare. Summer.
- † “ *ludoviciana*, (L.) Sw. *Coccyborus l.*, Aud. Rose-breasted grosbeak.  
Rare. Summer.
- Niphoeca hyemalis*, (L.) Aud. Snow bird. Abundant. Winter.
- Passerella iliaca*, (Merrem.) Sw. Fox-colored sparrow. Abundant. Spring,  
autumn.
- † *Zonotrichia melodia*, (Wils.) Bon. *Fringilla m.*, Aud. Song sparrow.  
Abundant. Some resident.
- † “ *graminea*, (Gm.) Sw. *Emberiza g.* Aud. Grass finch. Abundant.  
Summer.
- “ *pennsylvanica*, (Briss.) Sw. *Fringilla p.*, Aud. White-throated spar-  
row. Abundant. Spring, autumn.
- “ *leucophrys*, (Forst.) Sw. *Fringilla l.*, Aud. White crowned spar-  
row. Common at intervals, spring, autumn.
- † *Euspiza americana*, (Gm.) Bon. *Emberiza a.*, Aud. Black throated  
bunting. Common. Summer.
- † *Coturniculus passerinus*, (Wils.) Bon. *Emberiza p.*, Aud. Yellow wing-  
ed sparrow. Abundant. Summer.
- Peucaea lincolni*, Aud. Lincoln's finch. Common some seasons, spring,  
autumn.
- Passerculus savanna*, (Wils.) Bon. *Emberiza s.*, Aud. Savannah finch.  
Rare. Spring, autumn.
- “ *palustris*, (Wils.) Bon. *Ammodramus p.*, Aud. Swamp sparrow.  
Abundant. Spring, autumn.
- Spizella canadensis*, (Briss.) Bon. *Emberiza c.*, Aud. Tree sparrow.  
Abundant. Winter.
- † “ *socialis*, (Wils. Bon. *Emberiza s.*, Aud. Chipping sparrow. Abun.  
Summer.
- † “ *pusilla*, (Wils.) Bon. *Emberiza p.*, Aud. Field sparrow. Abund.  
Summer.
- † *Chrysomitris tristis*, (L.) Bon. *Carduelis l.*, Aud. Abund., some resi-  
dent in winter.
- “ *pinus*, (Wils.) Bon. *Linaria p.*, Aud. Pine finch. Ab Winter.
- Linota linaria*, ( ) Bon. *Linaria minor*, Aud. Red poll. Rare in very  
cold winters.

- Carpodagus purpureus*, (Gm.) Baird. *Enythrospiza purpurea*, Aud. Purple finch. Abundant. Spring, autumn.
- Cardinalis virginianus*, (Briss.) Bon. *Pitylus cardinalis*, Aud. Cardinal. Very rare.
- † *Pipilo erythrophthalmus*, (L.) Vieill. Ground robin. Abundant. Sum.
- † *Spiza cyanea*, (L.) Bon. Indigo bird. Abundant. Summer.
- † *Pyrranga rubra*, (L.) Vieill. Tanager. Common. Summer.
- Otocoris cornutus*, (Wils.) Baird. *Alauda alpestris*, Aud. Sky lark. Abundant. Winter.
- † *Dryotomus pilcatus*, (L.) Sw. *Picus p.*, Aud. Black woodcock. Common. Resident.
- † *Picus pubescens*, L. Sapsucker. Abundant. Resident.
- † “ *villosus*, L. Abundant. Resident.
- “ *auduboni*? Trudeau. Two specimens procured.
- Meclanrcpes varius*, (L.) *Picus v.*, Aud. Yellow-belly woodpecker. Abundant. Spring, autumn.
- † “ *erythrocephalus*, (L.) Sw. *Picus c.*, Aud. Red-head woodpecker. Abundant. Some resident.
- † *Centurus carolinus*, (L.) Sw. *Picus c.*, Aud. Red-belly woodpecker. Abundant, most so in winter.
- † *Colaptes auratus*, (L.) Sw. *Picus a.*, Aud. Flicker. Abundant. Resid.
- † *Coccyzus erythrophthalmus*, (Wils.) Bon. Cuckoo. Common. Sum.
- † “ *americanus*, (L.) Vieill. Rain crow. Abundant. Summer.
- † *Ectopistes migratoria*, (L.) Sw. Wild pigeon. Abundant. Resident. Rare in summer.
- † “ *carolinensis*, (L.) Sw. Dove. Abundant. A few resident.
- † *Melcagris gallopavo*, L. Wild turkey. Rare. Resident.
- † *Ortyx virginiana*, (L.) Steph. Partridge. Abundant. Resident.
- † *Bonasa umbellus*, (L.) *Tetrao u.*, Aud. Pheasant. Abundant. Resid.
- Charadrius semipalmatus*, Bon. Ring plover. Two shot, August 1845.
- † “ *vociferus*, L. Killdeer. Abundant. A few resident.
- Pluvialis virginiacus*, (Bork.) *Charadrius marmoratus*, Aud. Bull-head plover. Abundant in autumn only.
- Squatarola helvetica*, (L.) Cuv. *Charadrius, h.*, Aud. Black-belly plover. Rare in autumn.
- † *Ardea herodias*, L. Blue heron, Crane. Rather common. Summer.
- † *Egretta leuce*, (Ill) Bon. *Ardea egretta*, Aud. White crane. Rare. Sum.
- † *Herodias virescens*, (L.) Bon. *Ardea v.*, Aud. Fly-up-the-creek. Abundant. Summer.
- † *Ardetta cixilis*, (Gm.) G. R. Gray. *Ardea c.*, Aud. Least bittern. Abundant in summer of 1844.

- Botaurus lentiginosus*, (Mont.) Nutt. *Ardea l.*, Aud. Bittern. Rare.  
Spring, autumn.
- Nycticorax discors*, (Nutt.) Baird. *Ardea nycticorax*, Aud. Night heron.  
Young only seen in autumn.
- Heteropoda semipalmata*, (Wils.) Nutt. *Tringa s.*, Aud. Rare. Aut.
- Pelidna pectoralis*, Say. *Tringa p.*, Aud. Jack snipe. Abundant.  
Spring, autumn.
- “ *pusilla*, (Wils.) Bon. *Tringa p.*, Aud. Little sandpiper. Rare.  
Spring, autumn.
- † *Actitis macularius*, (L.) Bon. *Totanus m.*, Aud. Spotted sandpiper.  
Abundant. Summer.
- † *Actiturus bartramius*, (Wils.) Bon. *Tringa b.*, Aud. Field plover.  
Abundant. Summer.
- Totanus flavipes*, (Gm.) Vieill. Yellowleg. Common. Spring, autumn.
- † “ *chloropygius*, Vieill. *T. solitarius*, Aud. Solitary sandpiper. Com-  
mon. Summer.
- “ *melanolcucus*, (Gm.) Vieill. *T. vociferus*, Aud. Tell tale. Rare  
Spring, autumn.
- Macrorhamphus griseus*, (Gm.) Leach. *Scolopax noveboracensis*, Aud.  
Red breast snipe. Rare. Autumn.
- Gallinago wilsonii*, (Temm.) Bon. *Scolopax w.*, Aud. Snipe. Abundant  
spring, autumn, rare in winter.
- † *Rusticola minor*, (Gm.) Vieill. *Microptera americana*, Aud. Wood cock.  
Abundant. A few resident.
- † *Rallus virginianus*, L. Virginia rail. Common. Summer.
- Porzana carolina*, (L.) *Ortygometra c.*, Aud. Sora rail. Common.  
Rare in summer.
- “ *noveboracensis*, (Gm.) *Ortygometra n.*, Aud. Yellow-breasted rail.
- † *Gallinula galeata*, Licht. *G. chloropus*, Aud. Gallinule. Very rare.  
Summer.
- Fulica americana*, Gm. Coot. Rare. Spring, autumn.
- Lobipes hyperboreus*, (L.) Cuv. Hyperborean phalarope. Two procured  
Sept. 1843.
- Cygnus americanus*, Sharpless. Swan. Rare. Spring, autumn.
- Anser canadensis*, L. Wild goose. Abundant. Spring, autumn.
- † *Anas boschas*, L. Mallard. Abund. Spring, autumn, very rare in Sum.
- “ *obscura*, Gm. Black duck. Abundant. Spring, autumn.
- Mareca americana*, (Gm. Steph. *Anas a.*, Aud. Baldpate. Common.  
Spring, autumn.
- Chaulclasmus streperus*, (L.) Gray. *Anas s.*, Aud. Gadwall. Very rare.  
Autumn.

- Dafila acuta*, (L.) Bon. *Anas a.*, Aud. Sprigtail. Abundant. Spring, aut.  
*Spatula clypeata*, (L.) Boié. *Anas c.*, Aud. Shoveller. Very rare. Spr.  
 autumn.
- Pterocyanca discors* (L.) Bon. *Anas d.* Aud. Blue wing-teal. Rather  
 common in autumn, rare in spring.
- Querquedula carolinensis*, (Gm.) Bon. *Anas c.*, Aud. Green wing-teal.  
 Common. Spring, autumn.
- † *Aix sponsa*, (L.) Boié. *Anas s.*, Aud. Summer duck. Abundant. Spring,  
 autumn, rarer in summer.
- Oidemia perspicillata*, (L.) Flem. *Fuligula p.*, Aud. Surf duck. Three  
 shot, Oct. 1845.
- “ *fusca*, (L.) Flem. *Fuligula f.*, Aud. Velvet duck. Rare on Sus-  
 quehannah in winter.
- Aythya erythrocephala*, Bon. *Fuligula ferina*, Aud. Spring, aut. Rare.  
 “ *mariloides*, (Vig.) Bon. *Fuligula marila*, Aud. Little blackhead.  
 Abundant. Spring, autumn.
- Fuligula collaris*, (Don.) Bon. *F. ruftorques*, Aud. Ring-neck duck.  
 Rare. Spring, autumn.
- Clangula americana*, Bon. *Fuligula clangula*, Aud. Golden eye.  
 Abundant. Winter.
- “ *albcola*, (L.) Jen. *Fuligula a.*, Aud. Butter ball. Abundant. Wint.  
*Harclida glacialis*, (L.) Leach. *Fuligula g.*, Aud. South southerly.  
 Very rare, spring.
- Eristmatura rubida*, (Wils.) Bon. *Fuligula r.*, Aud. Ruddy duck. Rare.  
 Spring, autumn.
- † *Merganser castor*, (L.) Bon. *Mergus merganser*, Aud. Fish duck.  
 Abundant. Resident. Very rare in Summer.
- “ *serrator*, (L.) Leach. *Mergus s.*, Aud. Red breasted merganser.  
 One specimen procured.
- † “ *cucullatus*, (L.) Bon. *Mergus c.*, Aud. Hooded merganser.  
 Abundant. Resident. Much rarer in Summer.
- Hydrochclidon fissipes*, (L.) Bon. *Sterna nigra*, Aud. Black tern. One  
 procured in autumn.
- Xema bonapartii*, (Rich.) Bon. *Larus b.*, Aud. Bonaparte's gull. Rare  
 in autumn.
- Lestris pomarinus*, Temm. Pomarine jager. Adult procured on Susque-  
 hannah in Summer.
- Podilymbus carolinensis*, (Lath.) Less. *Podiceps c.*, Aud. Diver. Ab.  
 Spring, autumn.
- Podiceps cornutus*, (Gm.) Lath. Horned grebe. Very rare, spring, aut.  
*Colymbus glacialis*, L. Loon. Rare.

The following species of whose existence in our vicinity, we have had strong proof, are not included for want of specimens :

*Aquila chrysaetos*, L.

*Falco peregrinus*, L.

*Nauclerus furcatus*, (L.) Vig.

*Loxia*.

*Conurus carolinensis*, (L.) Kuhl. See Barton's fragments Nat. Hist. Penn.

*Porzana jamaicensis*, (Briss.) *Ortygometra j.*, Aud.

Additional species procured by Mr. J. Libhart, near Marietta, Pa., twenty-five miles south of Cumberland Co.

*Strobilophaga enucleator*, (L.) Vieill. *Corythus c.*, Aud.

*Sylvicola formosa*, (Wils.)

*Limosa fedoa*, (L.)

*Calidris arenaria*, (L.) Ill. *Tringa a.*, Aud.

*Chen hyperboreus*, (Pall.) Boié. *Anser h.*, Aud.

*Bernicla brenta*, (Wils.) Steph. *Anser bernicla*, Aud.

*Aythya vallisneria*, (Wils.) Bon. *Fuligula v.*, Aud.

*Larus zonorhynchus*, Rich.

“ *argentatus*, Brünn.

Total of species in Cumberland Co.	202
of which ; Breeding, - - -	104
Summer visitors, - - -	66
Resident, - - -	38
Transitory in spring and autumn,	90
Seen in autumn only, - -	8

Addenda. *Troglodytes brevirostris*, Nutt. Short-billed wren. One procured, Sept. 20th, 1845.

NUGÆ ETHNOLOGICÆ, NO. III.

BY PROF. H. S. PATTERSON, M. D. OF PHILADELPHIA, PA.

In enumerating the points of difference which separate man so widely from the rest of animated nature, we next come to the shape, position, and size of the head, and the peculiarities of function dependant thereon. This has already been referred to in speaking of the erect attitude, and the *os incisivum* or intermaxillary bone. In addition, I remark that *in man the head rests directly upon the top of the upright spine*. It is not exactly balanced upon it, as is sometimes represented, much the larger part being in front, especially in those persons in whom the anterior lobes of the brain are most developed. A well-shaped skull, poised upon its point, will incline forwards if unsupported, and this prepon-

derance will be much increased in the living body by the additional weight of the lower jaw, tongue and other soft parts. It is retained in its position by the great muscles of the back of the neck, which keep it *in equilibrio*. In animals it is hung by its upper part to the end of the spine, which in them is horizontal, or nearly so. Hence the necessity for the dense and powerful *ligamentum nuchae*, already mentioned.

*The head of man is also pre-eminent in the size of the brain and its enclosing cranium.* In him only is this delicate and important organ found in the perfection of its developement. I think it may be said without hesitation, that there is no part of the brain of any inferior animal which is not found more perfect in man, nor is there any which may not be formed from that of man, by abstracting, diminishing, or slightly modifying some of its parts. To him alone has the enjoyment of this crown and master-piece of organization been granted, and to this, again, we must ascribe this grand distinction—*the possession of reason*. I know that this is what some have decried as materialism, and dismissed as though that epithet settled the matter. It would be better first to enquire whether it is true. The unanimous voice of the investigators of nature attests its correctness, and it is indeed so obvious that a child may see it. It is no more certain, so far as our observation goes, that we cannot see without an eye, than it is that we cannot think without a brain. If the first of these two propositions does not startle us, why should the second? The assertion of the absolute necessity of vision, in our present state, to the cognition of form, color and distance, involves materialism just as much as the assertion of the necessity of vitally active nervous matter to the same and similar acts of the mind.—Those phenomena, indeed, which in the aggregate we call mind, such as perception, comparison, memory and imagination, and which, we behold to some extent in animals as well as man, we have never seen except in connexion with nervous matter, and (if we can have any knowledge of the relation of cause and effect,) as the effect of its vital action. Physiologically speaking, then, it may be asserted that mind is a manifestation of a peculiar form of matter in its appropriate state of vital activity. Every argument which proves that the liver secretes bile, (except that we can see it spring therefrom,) proves that the brain thinks. Its function is born and grows with the body, is affected by its diseases, is suspended by fainting, destroyed by wounds, weakened by age, and lost by death. There is no escaping this conclusion, and those who declare it incompatible with their preconceived notions, condemn them and not it. We must take the fact as it is, and if it does necessarily involve materialism, then must materialism be true, or nature is one multiform

lie. No man is entitled to the name of philosopher who fears to follow the truth wherever it may lead him, even though, for the moment, his path seems dark and dubious. Were this the place, it would give me pleasure to enter into this subject and show, as I think it can readily be shown, that the assertion made does by no means lead to materialism, but leaves the question untouched, exactly where it was before. Woe to the man that must look for his religion in the dissecting-room and the laboratory for he is building on the sand. He will find much there to interest him, much to instruct him, much to enlarge and elevate his mind by the exhibitions of beauty and goodness; but immortality and infinity are not things to be kept under bell-glasses or set up in show-cases of an anatomical museum. They are matters that the physiologist, as such, does not presume to meddle with. He sees and knows that which comes under his scalpel or his microscope, and nothing more. They are the instruments of his knowledge of the sensible world, and when he would learn aught of that which lies beyond sense, he shuts his books and throws by his knife, if he is a wise man, and goes down into the depth of his own soul to hold communion with that Inner Witness, which is "the light that enlighteneth every man that cometh into the world." It is, therefore, without the remotest allusion to any theological tenet, that I assert that the proper function of the brain is mind, and that in proportion to the perfection of this organ, are the power and extent of the function.

Now, man possesses it in a degree of completeness far beyond any other creature. Considerable confusion has occurred in the statement of this fact, from the difficulty of specifying with precision the points wherein the difference consists. Thus, it was at one time asserted that the intellect was in direct proportion to the size of the mass of the brain. But that of the elephant is more than twice as large as that of man. It has also been laid down as a law, that the larger the brain is in proportion to the body, the greater will be the intellectual development. But the size and weight of the brain are constant, while those of the body continually vary according to the quantity of fat, &c. Nor will the rule hold good, even with this exception. If true, it would give the mouse ten times the mind of the elephant and the ass double that of the horse. The brain of the humming bird, moreover, is 1-11th of its entire weight, while that of man is but 1-35th. Another mode of comparison is between the brain and the rest of the nervous system. This rule also is liable to numerous exceptions, and is too difficult of application to be relied on. Perhaps the best mode is to compare the size of the cranium proper, which is the receptacle of the brain, and corresponds with it in

form and dimensions, with that of the bones of the face. As the former contains the organ of the intellect, and the latter those of the senses and of mastication, it is presumed that the greater size of the former will indicate the preponderance of mind over sense, and that an excess of the latter will place the animal lower in the scale. There are several methods of estimating this proportion. That which is most generally adopted, is effected by what is called the *facial angle of Camper*, from the physiologist with whom it originated. A line, known as the *facial line*, is drawn from the most prominent point of the forehead to the socket of the front teeth of the upper jaw, and another horizontally backwards in the direction of the plane of the head in its natural erect position. Sometimes the latter is made parallel with the floor of the nostrils, which amounts to the same thing, and as in man it generally passes over the external opening of the ear, the skulls of animals should be placed in the same position, in order to obtain a just comparison. The human face being small and placed directly under the cranium, the angle formed by these two lines is very large, sometimes a right angle and in rare instances even an obtuse one, while in animals it becomes more and more acute as we descend in the scale. There are apparently exceptions to this rule, as in the elephant and owl, but the great prominence of the forehead in these animals depends upon the unusual size of the frontal sinus, a cavity between the two plates of the frontal bone, which exists in man to a slight extent, but is very large in them. Another method of arriving at the same result, is by comparing the area of the cranium with that of the face in a vertical section of the skull, leaving out the lower jaw. It will then be found that in man the cranium is four times the size of the face, while in the cow the face is double and in the horse quadruple the size of the cranium. Yet as these proportions are not invariable in their correspondence with the amount of intellectual manifestation, another mode of comparison has been devised, which regards the size of the separate portions of the brain. Thus, it is found that in man the upper and anterior portions are much larger than in the brains of animals, whose whole mass is equal in weight. According to the recent researches of Bourguery, the cerebral hemispheres, in man, include a nervous mass which is nine times that of the cerebellum and twenty-four times that of the spinal cord. There is no animal in whom this proportion is approached. The surface of the brain, in man particularly, is marked by deep furrows or convolutions, which increase the amount of its surface amazingly. These are said to be deep in animals and even in individuals, in proportion to their intellect. Both these latter modes of estimating the relative amount of the

various masses of nervous matter have an intimate connexion with the science of Phrenology, whose advocates claim for man an immense preponderance of those parts of the brain which they believe to be the special organs of the reflective faculties. In consequence of this distinction, he is endowed with that wonderful power we call reason. Traces of this are found in animals in the ratio of the completeness of their great nervous centre, the brain. Many of them possess the external senses far more acute than our own. Man is far inferior to the hawk in vision, and to the hound in scent. In mental endowments he is as far above them. That they have memory is indubitable, and that they possess imagination is also evident. Dogs, as we all know, frequently dream. That they can compare and choose is undeniable. The muleteer on the steep slopes of the Andes trusts more implicitly in the guidance of his mule than in his own knowledge; and they prize their animals according to their intelligence, saying habitually—"I will not give you the strongest mule, but the one that reasons best." But it is in man alone that we find intellect worthy of the name. This it is that gives him power over the material world, to compel it to what form may suit his taste or pleasure, and that directs and dignifies his sentiments. Without it, he would doubtless still have been a gregarious animal, seeking the company of his kind; but, with it, he becomes the centre of a circle of beautiful affections, and feels the warm ties of consanguinity, of love, of friendship, and of country.

Connected with this power, and the possession of articulate language, which in a great measure depends upon it, is another great fact in man's history. *He is the only progressive species on the earth.* Whatever experience is gained by one of the inferior animals, dies with it. They possess no means by which they can impart the lessons they have learned to another. Hence they have been the same in all ages. The flocks that browse on our hills have made no advance on those which fed in the primeval world upon the plain of Shinar. Yet what a wide difference in their masters! What a contrast between the awe-struck Chaldean shepherd, looking up to the shining hosts above him as the mysterious arbiters of his destiny, and the modern astronomer, who can mark the path and predict the motions of the remotest orb! Each new generation of men starts where its predecessor stopped, and, dying, leaves a richer legacy to its heirs. Hence the law of progress, at which some would sneer, even in this age and country which are its noblest evidence, has its foundations deep in man's nature. The capacity for progress, existing in both the individual and the race, is indicated by those powers which make man a teaching and learning being. It has

brought him thus far through many transitions and its course is not yet ended. Whither it will hereafter carry him, human imagination cannot reach. "It doth not yet appear what we shall be." This much we know, however,—that the undying hope of the world is no delusion. Ever brightly from the beginning has it beamed upon the altar of man's soul, and though the mists of error have often obscured and the wild tempest of unholy passions at times seemed to quench it, it has sprung up again with renewed splendor to kindle and illumine the ages. The universal mind of man has seemed, at all times, to place its warmest affections on the future. The faith in a deliverance to come has never died, nor even failed on the earth. Centuries of sin and oceans of blood have not sufficed to drown it. Every age has had its Simeons, bowed down and in no-wise able to lift themselves up, but looking out patiently for the expected salvation with the mists of decrepitude falling over their feeble eyes. There was a voice in every breast that attested its coming, and the world has still hoped and waited for it, not perceiving that it then was, and ever is, coming and passing on with the silent march of the undelaying years. And this faith shines on us, as brightly as on the past. Men feel now as intimately as ever that this poor present cannot last, but must give way to a better and nobler future. There have been tribes of people who had no tradition of a golden age or Eden, but none who had no prophecy of good things to come. The same exalted aspiration which dictated the burning lines of Virgil's *Pollio* and glowed in the rapt strains of Isaiah, quickened their souls and now quickens ours. After all that has been done, we still yearn for a better and happier to come. There lies the real Paradise, and casting the past to the winds, we would press forward to the light of its perfect day.

Eden with its angels bold,  
Love and flowers and coolest sea,  
Is not ancient story told,  
But a glowing prophecy.

But deeper even than these great facts of intellect and consequent progress, there lies another and most momentous distinction. As far as the former is concerned, it may be urged that at least its rudiments are found in animals, and therefore we cannot positively deny the possibility of its development in higher forms under given influences. But when we come to the Pure Reason, all connexion is lost. We feel that we are entering upon a new sphere. The sentiments of the Good, the Beautiful, and the True—these are things in which no other being (clothed in garments of flesh at least,) has any part. They belong only

to Him who is "the head and crown of things." The sacred sense of Duty, the distinction of Right and Wrong, the consciousness of the Infinite and Eternal—all those wondrous intuitions which bind us to the strange realities of the spiritual world,—where else do we find these? It is enough for me here merely to allude to these things. While man can look out upon the material world, in common with the animals through the windows of the senses, he can through another avenue, open to him alone, behold the glories of the kingdom of heaven, into which, whoso will, may enter and dwell there, and find freedom in obedience, perfect possession in perfect renunciation, riches in poverty, and exaltation in humility. To him who can realize this aspect of his nature, there is no extravagance in those lines of the old Platonist, Henry More, who "mystic" though he may be, deserves a more general reputation than he enjoys:

When I myself from mine own self do quit,  
 And each thing else, then an all-spredden love  
 To the vast universe my soul doth fit  
 Makes me half equal to all-seeing Jove;  
     My mightie wings, high-stretch'd then clapping light,  
     I brush the starres and make them shine more bright.

Then all the works of God with close embrace  
 I dearly hug in my enlarged arms,  
 All the hid paths of heavenly love I trace,  
 And boldly listen to his secret charms.  
     Then clearly view I where true light doth rise,  
     And where eternall Night low-pressed lies.

From this point of view of our subject, any attempt to prove the origin of man from inferior races by the laws of progressive development appears utterly preposterous, so wide is the chasm between him and those most nearly allied to him. The stories of fairies and satyrs and other semi-human hybrids, are of course now sent to the limbo of things forgotten upon earth. The scarcely less absurd tales of wild men in a hairy and quadrupedal "state of nature," which once found their way into scientific books, are equally exploded. The recent account of a negro with a tail found running wild in the woods of Louisiana, and which would have been seized on, fifty years ago, as the description of a veritable *homo Africanus caudatus*, has been forgotten almost as soon as published. All these cases have undoubtedly been abandoned as stray idiots, as were Peter and Caspar Hauser. As to the chain of being which commences at the lowest and most obscure form of organization, and is continued up to man, the notion is true enough

for poetical purposes, but it is by no means scientifically accurate. If it is worth any thing, it means that the formative organic impulse is single and universal, producing different forms only by varied degrees of development. But we have at the very outset of an enquiry upon this point, the entire diversity of the animal and vegetable series. It would also be easy to point to discrepancies of form and function among the individuals of each series, so decided that we must at once conclude that they are not possibly accidental, but must be radical and original. The assertion that the human embryo, in its development, passes through all the inferior forms almost in the very order in which we see them stratified in the various geological formations, commencing with the oldest, is also more fanciful than correct. The life of the foetus is purely parasitic and cannot with justice be compared with that of any order of beings having an independent existence.

From these and similar considerations, I think we may safely infer the entire independence of the human race as a separate species, called into existence at its appointed time by a particular effort of the divine Creative Will. Such is the teaching of Scripture, and science proves to us that the opinion is the most rational and consistent with known facts.

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ERRATUM. In the last No. of the Record, p. 231, line 19 from below, our printer has unfortunately made Prof. PATTERSON, say *Struthiophagi* instead of *Anthropophagi*! The indulgent reader will please correct accordingly. ED.

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AMERICAN ZOOLOGY,\* NO. II.

MAMMALOLOGY.

BY JOHN G. MORRIS, D. D. BALTIMORE, MD.

Before I proceed to a more systematic history of Zoology in our country, I must be allowed to communicate some general facts of the earlier times, which are essential to the integrity of my plan.

Mark Catesby, an English gentleman, who resided for some time in America, published early in the last century, "The History of Carolina, Florida, and the Bahama Islands." 2 Vols. Folio. This splendid work contains the figures of many fishes, reptiles, birds, quadrupeds, and insects, besides plants.†

Next to him, Dr. Garden, of Great Britain, who, as a respectable

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\* In the article on American Zoology in our last No. the name of Prof. Halde-  
man, as one of the Committee appointed by the Association of Geologists and Nat-  
uralists to prepare a work on American Entomology, was inadvertently omitted.

† There is a fine copy of this magnificent work in the City library of Balti-  
more.

physician, spent a number of years in Charleston, S. C., communicated much new light with respect to the animals generally, and especially the *amphibia* of our country. He was for a long time a correspondent of Linné, and was of immense service to the illustrious Swedish naturalist in furnishing information respecting the animals of America. Few names occur more frequently, or are mentioned with more honor in the *Systema Naturae* than Dr. Garden's.

Mr. Glover, a planter of Virginia, communicated to the public many valuable facts respecting American Zoology. The principal part of his papers on this subject appeared in the "*Philosophical Transactions*" about the year 1740.

Mr. William Bartram of Pennsylvania, an indefatigable and well informed student of nature, added considerably to the number of facts before known concerning the animals of the Southern and Western parts of the United States and the adjacent territories. These may be found in his Travels through North and South Carolina, Georgia, East and West Florida, &c. from 1773 to 1778.

Afterwards Dr. Barton, Professor of Natural History in the University of Pennsylvania, made very respectable additions to the Zoological science of our country. He wrote Fragments of the Natural History of Pennsylvania, Essay on the fascinating power ascribed to snakes, &c. and several memoirs on particular subjects in Zoology in the American Philosophical Transactions.

The names of other American gentlemen of the last century might be mentioned who have given descriptions of particular animals which came under their observation. In such a list Mr. Jefferson, Dr. Mitchell, Rev. Mr. Heckewelder and others, would be entitled to distinction. To these might be added the names of the Rev. Dr's Belknap and Williams, who in their respective Histories of New Hampshire and Vermont, after the example of Mr. Jefferson, in his "Notes on Virginia," have given Catalogues of the animals of those States.

Under the head of Mammalogy, (which includes all those animals which nourish their young with milk,) all investigations connected with the natural history of man would be referred. The history of the American race has been the subject of much speculation, but no books of American authorship, treat the subject more extensively and profoundly than those of Dr. Macculloch of Baltimore, Rev. Mr. Heckewelder, Dr. Godman, and the naturalist attached to the two expeditions to the Far West under Major Long.

The first systematic work on our quadrupeds is Dr. Harlan's *Fauna Americana*, or a description of the Mammiferous animals inhabiting

North America. This work appeared in 1825, and it contains descriptions of one hundred and forty-seven species. The author has exercised much ingenuity and industry in gathering the scattered notices and descriptions of his cotemporaries, arranging them in systematic order and adding his own discoveries, which are numerous and valuable. Previous to the appearance of this volume, little attention had been paid by our naturalists to the only and firm basis on which the genera of Mammalia can be constructed. Various attempts had, indeed, been made, but hitherto without vigorously examining the *dental* formula.

The most valuable work that has as yet appeared, is Dr. Godman's American Natural History, which was published in 1826. It consists of three large 8vo volumes, and gives figures of all the animals described. It is a monument of genius and industry. For eloquence of style, fidelity of description, fullness of detail, and general interest, it is not exceeded by Buffon's writings. It professes to embrace all the mammalians of our country, known at the time it was written, and it may well be regarded as an ornament to our scientific literature. Dr. Godman was a remarkable man; though but a young man, he had distinguished himself in his profession as a writer and teacher, and his Natural History, and Rambles of a naturalist, as well as other writings on Fossil Geology, display a versatility of genius, which would have elevated him to the very pinnacle of scientific fame, had his valuable life been spared. He fell a victim to his incessant labors, and died as the good man dieth, expressing the fullest confidence of Salvation through the merits of a crucified Redeemer.

The great work on our mammalians is now in the course of publication. That will be the *magnum opus*; truly, another proud monument of American genius, energy and labor. I allude to the magnificent production of Audubon and Bachman, both known the world over as most accomplished naturalists, and splendid writers. None of the letter press of the work has yet appeared but more than 30 plates with colored figures have greeted the eager eyes of the American public—and such plates, and such figures! Each plate is about 28 by 16 inches. The drawings, of course, are made by the inimitable pencil of Audubon, and the engravings executed by the most skillful artists. The animals have every thing but life, and as nearly all those which have been as yet published, are the size of life, you seem to be gazing on stuffed specimens rather than on paper and paint. The letter press will appear after all the plates are published, and the cost of the whole work will be \$300. Our mammals will then be *done* in this most elegant production, as the birds of our country have already been in that most magni-

ficent, most extensive and most costly work of Audubon, but to which Bachman also largely contributed of his rich stores of Ornithological science.

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THE NATURALISTS OF THE MOON.

(A Fragment of learned correspondence.)

MY DEAR DROCER:—I am devoutly rejoiced, that I have so far recovered from my recent illness, as to be able to answer your many kind inquiries relative to my late travels. I commenced my hazardous journey to the great Light Earth, in the 97036th month. You have heard, through my official report, the particulars of that excursion; and, it only remains for me to mention a few incidents, which, as they more especially concerned myself, may find pardon for their mention in our mutual friendship.

The first thing which struck me on arriving at Earth, was an animal, which though smaller, bore a strong resemblance to our great Woe, and actually gave forth a white fluid somewhat like the nutritious klin.—The two-legged creatures, which I have termed Emhosin in my report, were taking it through a process, which was much like our milking. All anxiety, I seized a cake of the apparent cheese and ate it eagerly, for I had then been fasting sometime; but bitterly did I repent, for the vile stuff emitted such an unpleasant effluvium, that I was thrown into violent convulsions; and, owing to some particles of this which yet remain in my system, it is that my health is now so bad.—But I have entertained you long enough with myself, and I will no longer withhold from your philosophic ear, such things as may prove more acceptable.

In nothing was I more interested, during my sojourn upon earth, than in watching the movements of the two-legged animals, of which I have spoken. They seem to have chief power on earth, and sometimes would almost make one believe they were endowed with intellects such as ours, though weaker in degree. Indeed, during my stay among them, I observed signs and sounds by which, I have not the least doubt, they communicate thought.

One of their classes, (genus Oniho—Species Setneduts) is especially interesting. I cannot pretend to enter into full detail of all my observations upon them, but shall merely confine myself to a few particulars, promising, at some future period, to renew the subject.

They usually live together in colonies, though I have met with some all alone; but, wherever found, they bear certain almost invariable marks. They walk with elevated heads, and have an expression of the

eyes, which may be interpreted as "knowing a thing or two," as Elbbar hath it, or something more doubtful in its character. I have known a few rather singular exceptions to this rule. How instructive, how delightful! to contemplate the different grades of created existence. That mysterious chain that binds fast all, from senseless rocks to these creatures, from them to our noblest excellencies, to the great Evoba, is an unseen Force to most, to us a visible Union and Safety! Would you believe it, my dear friend, these creatures actually appear to be promoting knowledge in their own limited way, by such means as we are accustomed to use. I observed in one of the numerous cells into which their whole habitation is divided, a number of inferior creatures in a state of preservation; and these they would occasionally examine, and add to, with evident satisfaction. Growing out beneath the head, is a pair of feelers, with which they touch and move objects, using them also apparently, as a means of testifying recognition, for I observed that when a stranger entered the cell, extending one, sometimes both of his, he would slightly agitate the corresponding one of those he met.

At one time, all having collected into one large cell, a dignified, fat-looking fellow strutted up to a little rostrum upon which he mounted. He then began to utter those peculiar sounds, which I conclude to be language to them, meanwhile moving his feelers about in every direction, and pointing to some of the specimens which lay before him.—May we not suppose, that this was one that had acquired more knowledge than the rest, and was now imparting it to them? He is quite an interesting looking animal, and would make a fine specimen for our great Cabinet. One day as I was contemplating the large Emoh in which they live, my attention was attracted by hearing a singular noise inside. Presently the whole colony issued forth in a long line, and thus proceeded until they came to another, containing but a few cells, one of which was very large. Here a few which had led the procession, were placed above the rest on a platform, where in succession each stood up and was made to undergo a curious process. Between each of these novel scenes, a little company, at the other end of the cell, elevated somewhat above the rest, appeared to take most *active* part in the exercises. Some blew into little hollow sticks which they held across their faces; others had little boxes with strings stretched along them, lying upon one feeler, whilst with the other they drew a slender stick across the strings, with very eccentric movements, which their heads and other limbs vainly attempted to follow. One very assiduous animal of another species, a number of which were present, was seated before a long box, and did its part by incessantly tapping upon a row of white and

black bones. As for the rest, they stood up and opened their mouths very wide, moving one of their feelers about in different directions very energetically. What all this meant I can scarcely conjecture, unless the individuals upon the platform had been guilty of some great crime and were making a public atonement. This appears probable from the fact, that they gave every token of violent trepidation. They grew pale, trembled, and some threw themselves into most hideous contortions of body. This no doubt arose from a burning agony within, for I observed that they, with trembling eagerness, swallowed large quantities of a cooling liquid that stood by, which, instead of proving a permanent relief, only maddened them the more, until the poor creatures ceased, apparently from mere exhaustion. \* \* \* \*

Here the letter unfortunately ceased, either through the indifference of the translator, or because he met with characters which he was unable to comprehend. In the Linnaean Cabinet, however, we have a package of Moonshee documents, and as one of our number is learning the language we may soon expect to ascertain its contents. AVR.

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SWALLOWS.—A FACT IN ORNITHOLOGY.

The following *fact*, (which I have thought may be interesting to the readers of the "Record,") I have frequently witnessed during the past three seasons. It relates to the regular nightly visits of innumerable multitudes of "*Barn Swallows*" to a dense willow grove adjoining the town of Martinsburg, Va. Immediately after sun-set, these birds may be seen coming in dispersed companies from every quarter of the heavens to join in one great congregation in the air above this grove. In the course of about fifteen minutes after their first appearance, they strikingly remind the beholder of myriads of swarming bees, or diminutive motes floating in countless profusion through the atmosphere, literally obscuring the declining light of day. After going through a number of playful and indescribable evolutions, they are observed to alight rapidly upon the more slender branches of the willows, for some time keeping up a chattering that falls upon the ear like the noise of a dashing waterfall. So closely do they settle together, that a stone thrown in among them has been known to kill as many as a dozen.—With the earliest dawn of the morning they all suddenly depart for their distant homes, to return in the evening with exact punctuality to their favorite roost.

These nightly visits commence about the middle of July, and are regularly kept up until the latter part of August of every year. Their

interruption is occasioned by the departure of the birds to tropical climates, which is then so sudden and complete, that after a single night not one is to be seen until the succeeding season. What is most surprising is the number of these little visitors. Some speak of them as many millions, some as far surpassing those immense flocks of pigeons which weigh down whole acres of forest in the Mississippi valley, and a friend remarked that he would not have before believed that the whole world contained as many swallows as regularly congregate here.

Martinsburg is no doubt under great obligations to this interesting army for the destruction of millions of noxious insects which might otherwise be annoying to personal comfort, and greatly injurious to agricultural interests. Infinitely wise and good are the Divine arrangements!

J. A. S.

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BROOKS' FIRST LESSONS IN LATIN.

PROF. BROOKS, of Baltimore, has lately brought out a little work under the above title, which we most cordially commend to the notice of all our classical teachers. It is, we think, just such a work as they have long wanted. As its title imports, it is intended for those commencing the study of the Latin language, and is admirably adapted to facilitate and render agreeable the acquisition of its elementary grammatical principles. The prominent advantages which we believe this work to possess are the following:

1. It contains all, and only those parts of the grammar which the student ought to commit thoroughly to memory in the first instance.—Boys especially are apt to be discouraged when a volume as large as either Ross' or Adams' is put into their hands, with the understanding that they are to commit every syllable of its text to memory, and if they are allowed to omit the large mass of notes and observations in the first instance, they are likely to take up the idea that they need never learn them very thoroughly.

2. It is a *practical* and not merely a theoretical grammar as most of such works now in use are. The learner at once applies what he has learned, and thus impresses it more deeply upon his memory and becomes more interested in it. We anticipate much from this course, but especially the prevention of sciolism.

3. It compresses a great deal of matter into a very small space.—Some things might be added to it, but it contains no superfluities. It does not appear to have been Prof. Brooks' design to "make a book," but to supply what his own experience as a teacher had taught him was required by beginners.

4. It is a Christian and an American book. In the examples and exercises a large amount of the matter is drawn from the Bible and from American themes, and is deeply imbued with the spirit of our institutions and of christianity. The advantages of this are too obvious to require that we should insist upon them. A few sentences taken

from the book at random, will illustrate my meaning: "The word of the Lord is pure." "The fear of God is the beginning of wisdom."—"Fides sine operibus est vana." "Libertas est melior gemmis." "Washington was the bravest of generals." "In the year 1784 Washington was President." (We may here remark, in passing, that we object to the way in which the English letter W is latinized, namely, by the V. We are decidedly of opinion that it ought to be either by a U or by Ga; thus, *Uashingtonius* or *Guashingtonius*, though we prefer the former.)

We might exert our critical skill in fault-finding, and suggest sundry improvements that have occurred to us whilst running over this little book, but, leaving all this for another occasion, we venture to predict that this will become a standard work in our schools, and will exert a most favorable influence upon the study of classical literature in this country.

R.

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 COMMENCEMENT OF PENNSYLVANIA COLLEGE.

The Annual Commencement of Pennsylvania College took place on Thursday the 18th of September, preceded, during the week, by the interesting public exercises of the different Societies connected with the Literary and Theological Institutions of this place. As usual upon such occasions, our village was enlivened by the presence of a number of friends of literature from a distance, attracted hither in anticipation of the rich intellectual feast which *Commencement week* never fails to provide. The attendance upon the different exercises was throughout unusually large—furnishing, in itself, the best compliment to the merits of the performances, and presenting to the officers and patrons of the Institution gratifying evidence of their steadily advancing progress in public favor. With a view of acquainting those readers of the 'Journal,' who may not have had the pleasure of being present upon this interesting occasion, with what transpired, I propose a succinct sketch of the exercises in the order in which they occurred.

*Alumni of the Seminary.*—On Tuesday evening, the 16th, interesting addresses were delivered in Christ's church, before the Alumni of the Theological Seminary, by M. S. CURTIS, on the "Common Origin of the Human Race," and by MR. M. ALLAMAN, on "Schelling's Philosophy,"—young gentlemen connected with the Institution during the previous year; and also by the Rev. C. W. SCHAEFFER, of Harrisburg, on the "Christian Ministry." The production of the Rev. gentleman was characterized by a chasteness and beauty of thought and style that served to commend it to the high regard of his auditors.

*College Alumni.*—The Rev. C. P. KRAUTH, Jr., the individual selected to deliver the annual address before the Alumni Association of the College, being unavoidably absent, his place was supplied, in accordance with a previous arrangement, by the Rev. Mr. TUORN, of Carlisle, who addressed the Alumni on Wednesday afternoon. After which the Association convened for the transaction of its usual business—the Rev. JOHN HECK presiding, and Prof. M. L. STOEVER officiating as Secretary. We understand that the attendance of members was very en-

couraging, and furnished an opportunity for a pleasing interchange of congratulations between a number of old class-mates and fellow-students. JOHN NAILL, Esq., of Illinois, was selected to deliver the next annual address—the Rev. J. L. SCHOCK, of Reading, Pa., to be his alternate.

*Annual Address.*—On the evening of the same day the Annual Address before the College Literary Societies was delivered by Rev. W. M. REYNOLDS, Professor of Latin and Intellectual Philosophy in the Institution, and President-elect of Wittenberg College, Springfield, Ohio.—We need scarcely say that the effort was every way worthy of Prof. REYNOLDS' high reputation as a scholar and a writer. The theme was "American Literature," which was discussed in a masterly and eloquent style, for better than an hour in the presence of a crowded and interested audience. Manly and independent, and withal thoroughly *American* in his views the production was honorable alike to the head and heart of the author, and administered a well-timed rebuke to the sickly, fashionable sentimentalism of the day, so prone to seek out the too often 'trashy' literature of other lands to the exclusion of the numberless masterly productions of our own countrymen, which every American youth should be directed to and taught to regard with honest pride and exultation. We are pleased to learn that the Address will be published by the Societies.

*Commencement.*—On Thursday morning the Annual Commencement came off—at which the Latin Salutatory was delivered by JESSE STOCKER, of N. Jersey; an Oration on "Common Sense," by JOHN W. MILLER, of Carlisle, Pa.; another on "The Love of the Marvellous," by SYLVANUS SHEIMER, of N. Jersey; and the Valedictory by MATHIAS MILLER, of Virginia. The performances of all the young gentlemen were very creditable, and, we believe, gave general satisfaction to the large assembly that listened to them. The degree of A. B. was conferred upon the members of the graduating class; the degree of A. M. in course, upon Rev. F. A. Barnitz, Rev. E. Breidenbaugh, Rev. J. Brown, Rev. A. Height, Rev. A. J. Karn, Rev. J. Kohler, Rev. W. M'Millan, Rev. G. Parson, Rev. P. Pfahler, Rev. J. P. B. Sadtler, P. G. Sauerwein, and Rev. A. J. Weddle. The honorary degree of A. M. was conferred upon John H. Brown, of Philadelphia, and Rev. Jonathan Oswald, of York; and that of D. D. upon Rev. Thomas H. Stockton, of Philadelphia.—The exercises were concluded with an able and impressive bacchalaureate address to the graduating class from President KRAUTH.

*The Music.*—It would be injustice to the members of the "Händel and Haydn Association" of this place, were we to conclude this notice without stating that very much of the interest thrown around the different exercises of the week was imparted by the superior and enchanting music furnished, at suitable intervals, by the ladies and gentlemen composing that Association. The public have frequently hitherto been indebted to the same source for rich entertainments, but we do not remember having heard upon any similar occasion a more uniformly favorable opinion as to the merit of the music and the skill of those who furnished it.

CIVIS.

Gettysburg, Sept. 1845.

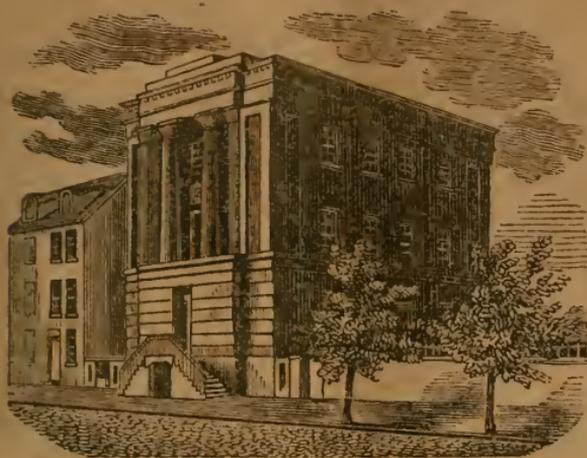
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# PENNSYLVANIA MEDICAL COLLEGE,

Filbert above Eleventh street, Philadelphia, Pa.



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Several gentlemen of distinguished literary and scientific attainments will deliver frequent addresses throughout the course, on subjects of interest and importance.

The institution is well supplied with experienced and successful teachers, and with a valuable and increasing collection of Philosophical and Chemical apparatus, Minerals, Shells, Zoological specimens, &c.

H. HAUPT, *Principal.*

TO CORRESPONDENTS.—Several articles which we had marked for insertion have been crowded out by the length of others which had prior claims upon us. J. R. K's on the "*Influence of tones, &c.*" will be handed over to our successors who will, no doubt, give it an early insertion in Vol. II.

# Pennsylvania College, Gettysburg, Pa.

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The government of the students is as energetic as their circumstances seem to require. They attend at least two recitations a day, Church and Bible Class on the Sabbath, and are visited in their rooms so frequently as to preclude the danger of any great irregularities. It is believed no Institution in the United States has more exemplary young men in connexion with it. They are all required to lodge in the College Edifice, special cases excepted.

The annual expenses are—for board, tuition and room-rent, during the winter session, \$61 87½; for the summer session, \$11 87½. Washing, \$10 00; and Wood, \$3 00. Total expense, \$116 75. Boarding can be obtained in town at \$1 25 per week.

There are two vacations in the year, commencing on the third Thursdays of April and September, each of five weeks continuance.

## Acknowledgements of Donations to the Cabinet of the Linnæan Association of Pennsylvania College.

- September, 1845. From *Leah Baugher*, a live rattle snake.
- From *J. N. Stocker*, two specimens of crystalized quartz, and one of jasper, from Mt. Ida.
- From *G. Marts*, one reptile in spirits.
- From *W. P. Bell, M. D.* one mink stuffed.
- From *Mrs. Baugher*, Countaindale, specimen of raw cotton.
- From *Rev. F. W. Conrad*, shell and minerals, from the bed of Jordan, Palestine.
- From *Mrs. R. Conrad*, minerals.
- From *Rev. J. G. Morris, D. D.* 21 specimens of European shells.
- From *Mr. Varden*, Washington, 23 specimens of various woods, from Sandwich Islands and Oregon.

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