

The Aurora.

"SCIENCE WITH PRACTICE."

VOL. V.] IOWA AGRICULTURAL COLLEGE, AMES, IOWA, AUGUST, 1877. [NO. V.

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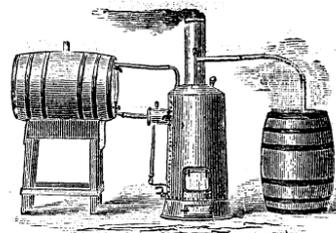
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LITERARY.

THE LOVER'S STRATAGEM.

LUCY SHEPARD.

I wish I could show you Anthony Dean,
Hair uncombed and face never clean,
A short little dumpling with freckled face,
And a cunning sort of awkward grace.

Ruddy cheeks and eyes in a glow,
Hands all warts and a rag on his toe,
A hat with half of the brim torn away,
His collar gone and his coat astray.

With many a patch on his pants and vest
And many a hole to cover the rest—
The whole collection, taken together,
Proof against any kind of weather.

Known to every one far and wide,
And dear to each heart in the country-side,
Now see the heroine, lithe and slim,
Light of foot and supple of limb,

Age just six, or a trifle over—
Sweet-heart she, and Anthony lover—
Hair of gold and eyes of blue,
Nose turned up—to look at you.

Laughter deepening the dimples merry,
And bubbling over the lips of cherry,
Or sober now with a serious grace,
Looking up in an older face.

With thoughts too deep for her tender age,
Which well might puzzle a wiser sage,
Always together they might be seen—
The Judge's daughter and Anthony Dean.

And all the years could make no change,
Till sixteen came with a tender flutter,
And thoughts so sweet and yet so strange,
Too romantic far for the tongue to utter.

And the blushes covered her cheeks of snow,
And a sweet confusion came o'er her,
When the new love happened to come or go,
Or his name was mentioned before her.

His forehead was low and his brains were small,
But his words were drops of honey,
Her beauty was pleasant, but most of all
He thought of her father's money.

The very last fashion from crown to sole,
His boots so polished and shiny;
With a fresh bouquet in his button-hole—
Alyssum or Rose of China.

His hair was as black as a raven's wing,
And he parted it just in the middle,
A linnet would blush to hear him sing,
As he gracefully played on the fiddle.

Imagine you see him now at her side,
His figure so daintily posing,
While he sings to her of the "Pirate's Bride—"
A song of his own composing.

SONG.

"Lightly he rocks upon the billow,
Swiftly he flies o'er the main;
Bitter tears fall on my pillow,
Oh, why can not my love remain?
"Fly to him, birds of the ocean!
Haste to him, winds of the sea!
Watch o'er his every motion,
And speed back my love to me."

Or he waits at the stile—do you see his cane,
And the ring on his white hand glisten,
Mayhap you can hear a tender strain,
If you care enough to listen.

SONG.

"Now the robin is building on the house-top,
And the jaybird is calling from the tree,
And the young larks are singing in the meadow,
Oh, come my love to me.

"Lightly falls your foot upon the clover,
Brushing the early dew away;
Fast beats the heart of your lover,
And brighter blooms the May."

Each flower for them some meaning had—
The rose showed love's sweet madness,
"O, think of me," the pansy said,
And aspen spoke of sadness.

And as he rode his thorough-bred
Beside her pony dapple,
He pulled the bough from overhead,
And gave her bloom of apple.

"My preference of all sweet girls"
He read the tender meaning,
The wind blew out her golden curls
The crimson blushes screening.

And if they rode or if they walked,
He told the story over;
And of the future, well he talked,
Like any poet lover.

"We'll gather cowslips in the spring,
We'll watch the brake uncurling
To make nests where birds may sing,
Green banners, round them furling."

But now stern parent interferes,
To make distress and trouble;
And if their love could be increased,
This surely made it double.

Now hidden meetings came to pass,
Blue eyes grew dim with crying,
And desperate things were thought, alas!
And even thoughts of dying.

Sweet Pea had said "By moonlight come
To walk in garden shady,"
Sweet William added "This the last
For thee and me, Dear Lady."

And so they met beneath an oak;
The moon through clouds was sailing;
Her voice would tremble when she spoke;
Her very lips were paling.

He pleaded hard to guide her fate;
One step and all was over,
She rode her pony from the gate
Beside her happy lover.

"Ere you should grieve for this," he said,
"I'd go through fire and water,
Who harms a hair of your dear head
Must ride through bloody slaughter."

"I wish your foes might come to-night
If one you have my Lily!"
He turned his head and saw a sight
That made his blood run chilly.

A horrid specter rode behind;
His ghostly face was grinning,
A moment later, like the wind
The youthful pair were spinning.

The lover's hair streamed in the night
His face was hard and stony;
And fear had drawn the skin so tight,
His cheeks looked white and bony.

A funny sight it was, but she
Could have no thought of laughter;
They galloped fast, nor turned to see
The phantom clattering after.

Past rocky height and grassy vale,
And bridge of murky river,
They rode so fast, it made a gale,
That kept them in a shiver.

The small dogs barked along the lane,
Heads stuck o'er window-ledges.
Her pony could not stand the strain
And sank among the sedges.

The lover fled without remorse,
For fear was now the master;
He gave the bridle to his horse
And galloped on the faster.

Of this, the lady could not guess,
For she at once had fainted:—
A lovelier picture of distress
Than artist ever painted.

And now the ghost, a new turn took,
'Twas quite unprecedented.
He threw his sheet into the brook,
And danced like one demented.

He tore a mask from off his face
And hid it the rushes;
A white-haired wig from brown-haired head,
And threw it in the bushes.

And when the maid unclosed her eyes,
'Twas Anthony stood before her,
Gave her his hand to help her rise,
Nor mentioned her adorer.

The brown and gold have turned to gray
In two score years and over,
But both still live to bless the day
That lost the recreant lover.

BURNS.

Genius seems to be fettered by the bounds of no climate, nor is it the characteristic of any particular people. Every land has had its "sweet singer," and the pride of each nation is found in the love it bears for its dead heroes. The limits of its advancement recede as each child of inspiration gives to the world the product of his toil, and unfolds beauties of thought which find a home in the hearts of mankind. It consists not alone in the products of the imagination, but in the opening of the sealed fountains of human sympathy, which gives new life and significance to the bonds of fellowship. The sweetest melodies that e'er were sung, and some of the richest gems of poetry that live in the literature of the past, were the work of men whose souls were stimulated by the noble deeds of the common people. Poetry finds its grandest mission in giving dignity to the lives of the humble; and the bard who lives longest in the hearts of his countrymen is he who brings sympathy for human sorrow to the relief of the oppressed.

Such was the mission of Robert Burns. Born of humble but honest parents, he knew, by experience, the field from which most of his poetry derives its beauty and pathos. Reared a plowman, he could feel the pleasures that a life of independent labor gives, and yet know full well the stings of poverty and the grindings of oppression to which many of Scotland's hardy sons were doomed. It was in scenes like these that many of his best productions flashed, as it were, into existence; for he wrote under the impulse of his nature which was ardent, often enabling him to produce poetry of the deepest pathos while the sentiment as a cloud passed o'er his soul.

Into his life were grafted the events of his childhood, and it was among the humble scenes of his youth that he

"—walked in glory and in joy,
Following his plow upon the mountain side."

No other pen has ever told in truer words the debt a nation owes her honest sons of toil; or the happiness that is found in sweet content and noble purposes of life. How beautifully he tells of true and noble deeds acted in the busy round of daily peasant life; and then instills into the minds of the people the aims that give a nation dignity, and the only grand end of life.

"From scenes like these old Scotia's grandeur springs,
That makes her loved at home, revered abroad:

Princes and lords are but the breath of kings,
'An honest man's the noblest work of God."

Among the many beauties of Burns' writings is the ease and natural elegance with which it flows. He was bound by no conventional rules and turned only to the promptings of nature and the poetical swellings of his own soul for the guidance of his Muse. He revolted from being bound by arbitrary ties, and sought to picture nature as it existed in all its wild, free beauty. It seemed as if the measures came uncalled from his mind, and that, when he felt the inspiration of the moment, words rushed unbidden, crowding each other for utterance.

"The words came skelpin rank and file,
Amangst before I ken!
The ready measure rins as fine,
As Phoebus and the famous Nine,
Were glowing owre my pen."

No man's early training in religious matters could have been more rigid than was that of the Scottish bard. He was guided during his childhood's days by the teachings of a father who made the "ruling of God's providence" the light and guide of his family. It was to this training that he owed the deep devotion in which he held religion, even when the excesses of his later life had marred in no small measure the purity of his character. And it is beyond doubt that to this alone are due the better resolutions he made when removed from the influences of temptations which the convivial habits of the social life of Edinburgh threw around him. It is certain, at all events, that there is a vein of true and deep piety pervading much of his poetry; and the moral sentiments of some of his shorter poems was not lost on the rude customs of his day. He ever held that the good were blessed of "God and man."

"The man, in life wherever placed,
Hath happiness in store,
Who walks not in the wicked's way,
Nor learns their guilty lore.

"Nor from the seat of scornful pride,
Casts forth his eye abroad,
But, with humility and awe,
Still walks before his God."

Burns was not the only man and poet whose genius was stirred to life, and the richness of whose mind was brought to light by a love affair; but he was one of the few who held that sacred passion in all its true worth, separating the true and ennobling from that which only degrades. He felt the pure sentiment and all his love poems are filled, not with sentimental nonsense, but earnest fervor, as shown in the outpourings of a fervent heart. He dignified the name of love by binding the pure impulses together and upholding the principles of human nature which make man a being of sentiment and not the creature of sensual life. Not like Byron, who used his genius to immortalize the intrigues of corrupt social life, he confined his pen to the songs of the uncultured rustic whose longings for fellowship came from the heart untrammelled by court vices and unused to the deceits of fashion. He sung of the sacred passion as God had planted it in the human breast.

"Oh happy love!—where love like this is found!
Oh heartfelt rapture!—bliss beyond compare!
I've paced much this weary mortal round,
And sage experience bids me this declare—
'If Heaven a draught of heavenly pleasure spare,
One cordial in this melancholy vale,
'T is when a youthful, loving, modest pair,
In other's arms breathe out the tender tale,
Beneath the milk-white thorn that scents the evening gale."

But although he revered the beautiful and true wherever found, his own life is far from reproach; and he furnishes a notable example that "genius is often tinged with common clay." His later life was made miserable by his over indulgence in strong drink. Like many more, he filled an early grave, dimming his fame by the ruins of wrecked opportunities. It seems strange that where the stamp of God's bounty rests plainest, and the richest resources of mind are found, a withering curse, spread by the black wing of intemperance, blasts the

cherished hopes of millions. Will the time ever come when men shall cease to mar the prospects of their lives and wither the buds of promise, by selling their souls for drink?

His later life was also unhappily connected with that of Mary Campbell (Highland Mary) whom he probably would have married had not death removed her from the bitterness of her earthly life. She was a woman far more worthy to be his wife than the one whom he did marry, and he shows his appreciation of her worth and his devotion to her memory in a poem to "Mary in Heaven,"—one of the finest examples of the kind in the English language.

"Thou lingering star, with less'ning ray,
That lov'st to greet the early morn,
Again thou usher'st in the day
My Mary from my soul was torn.
Oh Mary! dear departed shade!
Where is thy place of blissful rest?
See'st thou thy lover lowly laid?
Hear'st thou the groans that rend his breast?"

Burns was a patriot. He loved his country with no ordinary affection, and the tributes he paid her are among the unperishable parts of his writings. He saw with a clear vision where the rocks of danger lay, and he felt, with all the intensity of his nature the necessity of keeping her populace free from the enervating influence of indulgence. Beautifully is his love portrayed in the closing stanzas of the "Cotter's Saturday Night."

"Oh Scotia! my dear, my native soil!
For whom my warmest wish to heaven is sent!
Long may thy hardy sons of rustic toil,
Be blest with health, and peace, and sweet content!
And oh! may Heaven their simple lives prevent
From luxury's contagion, weak and vile!
Then, how'er crowns and coronets be rent,
A virtuous populace may rise the while,
And stand a wall of fire around their much-loved isle."

Such is a brief view of the work, and life, and character of Burns! A man, possessing at once the genius of his land, the love of his countrymen and the fruits of his own folly. Throughout his writings we see the noble soul, the generous mind, the poet's fire, and catch occasional glimpses of the heights to which his genius would have carried him, had his life not been wrecked by the customs and sins of his age. He wrote for the common people; and his works are cherished and his name revered at every Scottish fireside; and while the hardy peasant heart shall beat, while sentiments of purity and deeds of valor shall warm the hearts of Scotchmen they will sing the praise of the Ayr plowman. When the patriotism that fired the soul of Bruce of Bannockburn shall live no more, when sympathy that warms the heart of man for man shall cease to be a virtue, when friendship's trust and faith in God are mockwords in the life of man, and principles that ennoble life and fill the world with gladness shall cease to find an echo in the human breast, the name of Robert Burns will live no more in the hearts of Scotland's "hardy sons of rustic toil," but not till then.

A ROMANCE IN FAIRY LAND.

Mitty Natty was a fairy. A sprightly airy little thing that lived under a red clover leaf with her old grandmother who told fortunes and was called "Old Witch Natty." This fairy was old indeed and bent over like a rainbow; her teeth were all gone but one, and her nose and chin shook hands every time she shut her mouth. She had little black eyes that snapped like a fire cracker every time she winked, and whenever she stepped out from under the clover leaf all the children fairies in the neighborhood were so scared that they scampered away to their homes and hid their faces in their mothers' aprons. But every fairy loved Mitty; she was so modest and sweet and pretty. She had big blue eyes made from a piece of the sky that the lightning cut out one night and the rain washed down to earth, but they were sunshiny little skies and never got cloudy and rainy like the big sky does. She had curls made from sunshine

which she curled over a curling-stick about as large as my grandmother's smallest cambric needle; prettiest of all she had dimples all over her face that looked like little bowls full of laughter. She was very good to her grandmother, did all the work, and their three rooms were a marvel of neatness. If an ant came along with muddy feet Mitty took the broom stick and drove him away. The spiders all loved the little thing and used to weave her dresses and give them to her; she did not have to buy them as other fairies did. Now just a little piece from them there was a rich old fairy that lived under a rose bush. He, as I said, was rich, and as I didn't say, he was proud.

He had one daughter whose name was Regna and she was as proud as her father. She had black eyes and hair, and red lips that knew just how to say all sorts of naughty words to her little fairy servants and old god-mother, and just how to say sweet things and sing love songs and tell old legends of Fairy-land whenever Rawney came. Rawney was her lover and lived up in a cherry tree. He used to harness up his mosquito team and come down to see Regna every day, and they expected to be married in a very short time. Then there was to be a great dance in Fairy-land. The ball was to be held on a sugar maple leaf. Old Pab, the fiddler, was practicing his music for the occasion, and the fairy servants and god-mother were sweating and worrying over the cakes and salads and dresses which must be prepared. Regna was crosser than ever, and used to scold the servants and box their ears when Rawney was not there, but when she went out riding with him, or talked to him in their rose parlor, her lips were red as cherries and she was so sweet tempered that he used to call her his angel. One day they were out riding, she said "Let's go to old witch Natty's and have our fortunes told." So they stopped before the clover leaf cottage. He tied the bills of his moquitoes to a stem, and they went in. Every thing within the cottage was clean and neat as usual. Mitty and her grandmother were eating dinner. They had a little flat-topped pebble for a table; this was covered with a cloth made from a meadow spider's web. For dinner they had boiled ant eggs, the roasted hind leg of a fly seasoned with half of a mustard seed, a drop of honey in a clover flower pitcher, and a dew-drop from which they drank. Regna drew off her tanned ant skin glove and asked mother Natty to read her fortune. The old lady's nose and chin separated with a jerk as she shook her head. "In your hand I see no wedding ring, I see a coffin." Now this made Regna so angry that she seized the thigh bone of a fly which lay on the table and thrust it into first one of witch Natty's eyes and then into the other, so that the poor old fairy could not see at all. Poor Mitty ran forward to snatch the bone from Regna's hand, but too late; she caught her poor old grandmother in her arms and laid her on their bed made from the down of a whippoorwill's feather. Rawney was outside when Regna did the terrible deed. He heard one of his moquitoes kicking the other and went out to tie his leg down. He heard Mitty's scream and came running in. When he learned the whole of the terrible thing, he turned to Regna and said "You are no angel, you are a fiend; go home to your father's rose bush mansion and tell him you have made a poor old woman blind and almost killed Mitty with grief. Tell him that I hate you and would rather die and have a butterfly carry me to Heaven under his wing than to marry you." Now Regna knew he meant just what he said. She was a desperate fairy but loved Rawney and would rather die than live without him; so instead of going directly home, she went around behind a bunch of grass to where an old spider lived. "Old Spider" she said, "I want a whole drop of the poison you put into flies when you kill them." He took a bottle made from a gnat's bill and put some poison in it. Regna took it and went home. She went up to her chamber which was in a half opened rose bud. She dressed in white, combed her hair very smooth, drank a sip of the spider's poison and lay down on her bed. When her maid came to call her to supper she found her a beautiful corpse. Regna, the once proud, cross, handsome fairy was put into a hollowed out wheat grain, and to this day, so the fairies tell me, a black eyed ghost wanders through the spacious but now deserted rooms of the rose-bush mansion. Every day after this sad affair Rawney might be found at the clover-leaf cottage. He helped Mitty take care of her grandmother, and when she was well enough, he took them both out riding behind his smartest mosquito team. All the children fairies were ashamed of the way they had treated the old lady and used to come and sing songs to her. Now isn't it queer? Rawney fell in love with Mitty and asked her to marry him and come to live up in his Cherry tree and have twenty servants; one to comb her hair and dress her, one to cook her meat, one to do everything. She wouldn't have anything to do but ride, and sing and swing on the stems when the wind blew. He saw how kind she was and loved her much more than he ever had Regna, and he was so good that she loved him and promised to become Mrs. Fairy. The spiders wove her a rich gown and took it to the dying house where butterflies get their coats colored and had it made gayer than a rainbow. They had a great dance on the Sugar Maple leaf. Old Pab played his melodies. Rawney took Mitty and her blind grandmother to his rich Cherrytree-house and they all lived happily ever after.

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THE AURORA, AMES, IOWA.

ERRATUM: In our last issue, through some blunder on our part or some one's else, the leading idea in Mr. Hitchcock's oration was misstated. The sentence should have the following instead of its present form: "He showed, that while we think, and justly too, that the achievements of the past are great and demand admiration, the fact must not be lost sight of that there are monuments of present greatness with which the past can furnish no parallel."

The mooted question as to what College papers should contain, is one which is likely to be settled in as many different ways as there are different representatives of that class of papers. Each corps of editors has a standard to which its members will endeavor to bring their paper, and the contents of the same will conform to this standard in so far as they are able to make it, being modified incidently, of course, by circumstances. This being the case, it may seem a waste of time to attempt any discussion of the problem; and yet, there are certainly some underlying principles which are general, and to which all can turn as a main line out of which all the different lines of argument and standards of taste spring.

Contributors ask, "upon what shall we write?" and the answer to this question involves the whole solution of the proposition; but the answer would not serve to quiet the clamorings of some readers who think it a mark of genius to find fault and ask, "why is not this, that and the other put in?"

In the first place, a college paper should be representative and express as nearly as possible the sentiments of the institution under the auspices of which it is issued. It serves at once the purpose of furnishing the students a medium through which they can express their ideas, and also make known to outsiders the condition and workings of the students as a body.

Its local department is one of immense value to the home student, and also to those who have left the college, as it furnishes the local gossip, and serves to put all the different classes upon a common level, by making the affairs of college life one in interest to all. And yet this is by no means of such para-

mount value as to claim for itself the lion's share of attention. Besides circulating at home, every college paper carries tidings to other institutions, and they who have charge of it should bear in mind the fact, that the character of the institution will be judged in a great manner from the contents of the paper they send forth. If there is no attention given to the literary part and all other things are swallowed up in the prominence of home affairs, the conclusion would be just that the ability of the students was confined principally in that channel. A nicely written essay upon any of the manifold subjects that are brought to the knowledge of a student, serves to give dignity and tone, not alone to the paper, but also to the school as a whole. It is not a necessary conclusion, that, because an essay possesses merit, it, of a consequence, must be dry. Pleasure is one of the important things of life, whether confined to a college or in the world at large, and surely a regard for the pleasure a reader will experience should form one of the principal considerations of the writer, and this is just the point to be aimed at. Every one who would hope for any success in writing must strive to acquire such a style that, while he edifies by his productions, he may also entertain; for if he do not, the benefit that might be reaped by any one will never be known, since no one will ever take the pains to read. It is a fact that we by nature care more for entertainment than instruction; and he who is the most successful is he who takes advantage of this element in man's nature, and satisfies our desire for pleasure, by the agreeable manner in which he imparts his knowledge. But there is a distinction which deserves notice between the pleasure one experiences from reading an artistically constructed sentence, and that derived from a class of writings known as funny. And this leads to the consideration of the space that can profitably be devoted to this kind of writing. It certainly is a relaxation from the solid work of the class-room to occasionally read a paragraph that is truly witty; but to just what extent this may be carried is not so easily settled. If all that circulates as such were true wit, the fixing of the limit would be comparatively simple. The demand for this class of literature cannot be taken as a very prominent factor in the determination, for, lamentable as it may be, the craving of the American people for the "sharpness" of nonsensical spelling, and murdered English, has risen to such a pitch that doggerel is known as inspired sentiment. One thing may be safely said; which is that whatever amount of wit be used, care should be taken that the best quality alone be allowed a hearing.

Its appearance is one respect in which a college paper can and should strive to be as nearly perfect as labor and care will make it. Poor typography and objectionable grammatical construction should be scrupulously avoided, in as much as unquestionable English will always raise the character of any production.

It must thus be evident that while a college paper has a mission to perform at home, it also should possess those features that will give it a standing abroad. And they who can combine in the most perfect manner the various elements that go to make up a useful and entertaining paper, will meet with the most encouraging results.

SHAKSPEARE says, "costly thy habit as thy purse can buy, but not expressed in fancy, rich not gaudy." It is evident from this that the myriad-minded poet knew the elements that are used by the world at large in judging of the individual worth. In that day, as in this, the world had little from which to judge the standing of a man aside from his outward appearance. True merit is not always, nay seldom, discovered by a single glance into the face, and if it be hid beneath a rough exterior, mankind are apt to be hasty in rendering a judgment. It is a fact, taught alike to-day as well as at the time Polonius gave that excellent advice to his son, that neatness and regard for one's personal appearance are things to which all should give due attention.

SCIENTIFIC.

THICKNESS OF THE EARTH'S CRUST.

The following essays were read before the class in Geology, and were written for class exercises.

Upon this part of Geology opinion has been as various as it has been upon many others. The whole history of Geology has, in fact, been that of conflicting opinions and the overthrow of theories, which, in their day, were considered immutable, by others that enjoyed a short lived supremacy and then followed their predecessors to the dusty shelves of rejected theories. Almost all our knowledge of Geology has come to us through a series of changes in the opinions of Philosophers, and the data assumed in their computations, from the time that Egyptian mythology assigned to the creation of the world, the assistance of a masculo-feminine principle, which rescued the earth from chaos by some act of incubation, until scientific men of our own age explained her existence by saying that her present condition is only the result of the combination and condensation of an infinite number of gaseous nebulae, the existence of which they are still at a loss to explain.

That the interior of the earth is a molten mass is almost universally admitted at the present day; but the causes for such a condition are by no means so generally agreed upon, nor do they concern us in the topic under consideration. It is generally believed that the earth was, at one time, a molten mass, and that it has reached its present state through the agency of subsequent refrigerations. This theory was defended by Cordier, and gained for itself many adherents; but Laplace made some calculations based on astronomical observations, which weakened the faith of many in the theory of the continual cooling of the earth's crust. It was admitted on all hands that the axes of the earth would become shortened by this process of cooling, and, consequently, that the length of the earth's day would be altered. This is a consequence of the cooling theory that can not but follow from the contracting of the surface. Laplace, however, found by a series of interesting experiments, and with the help of ancient records, that the length of the day had remained constant during all time of which we have any record. He therefore concluded, that, as we *know* the day has not changed in length, that the surface of the earth could not have lost sufficient heat to have produced any alteration in the length of its axes. This demonstration of Laplace led many of the followers of Cordier to desert his theory; but some of the more resolute proved beyond a doubt that the earth had lost an immense amount of heat, and that the surface has also contracted. They obviated Laplace's objection by saying, that the increased speed of the earth due to the contraction of its surface was counteracted by an attractive force from some of the other planets—a theory which is untenable from the fact that the attraction of the heavenly bodies, would in all probability, be the same before as after the cooling of its surface. Others thought that it was due to the loss of a part of its initial velocity which counterbalanced that gained by means of the contraction of its surface. Here are the two facts: that the length of the day has remained constant, and that the earth has undoubtedly cooled and contracted. The reason of the constant length of the day does not concern us; for the last fact, viz., that the earth has cooled, is that with which we are more nearly concerned.

The depth to which the earth has become solid has been variously estimated; and were one to look only at the proof of either theory he would think it demonstrated beyond a reasonable doubt; and yet, the amount of difference in the computations is enormous. Richardson estimates that the crust could not be thicker than ten miles; while Mr. Hopkins says that its minimum thickness cannot be less than 800 miles and that the probability is that it far exceeds this. You will thus see that between these two opinions there is a wide latitude. Dr. Mantell

has laid down the maximum thickness at 100 miles, and substantiates his assertions by saying that the degree of heat that would be reached at that depth would be sufficient to melt all known substances. He assumes as a basis of his calculations, that the increase in heat as we go towards the center of the earth is about 1° for every 75 feet. It is somewhat more than this in many places, the amount depending upon the conductivity of the material through which the boring passes. From the basis he assumed, he showed that all substances would be fused long before reaching the depth of 100 miles; but he took into account the fact that the fusing point would be raised by the additional pressure to which the substances would be subjected, and by means of mathematical calculations arrived at the conclusions above stated. Against this it is urged that the comparative thickness of the crust as compared with the whole distance to the center of the earth, is so small that the surging mass of molten matter would break the crust and escape through the action of centrifugal force. It is true that the thickness of the crust is comparatively small, but in this it must not be neglected that the force of gravity acts on the molten mass inside, thus drawing it to a common center just the same as it does on the crust and as it did on the whole mass before it had cooled at all. The tendency of the interior fluid to burst through the crust and escape is no greater now than when there was no crust and it maintained its form through the forces of cohesion and gravitation. The objections thus urged against this theory are not very potent, and were there no other reasons for believing the crust to be greater than laid down by Dr. Mantell, we would be compelled to give it due credit.

Mr. Hopkins arrived at conclusions in regard to the thickness of the earth's crust from results obtained by the resolution of the problem of the precessional motion of the pole of the earth which is caused by the attraction of the sun and moon, but more particularly by the moon, upon the protuberant parts of the earth's equator. He found that the disturbing power of the moon will not be the same on a globe which is all solid and one which is all liquid, or upon one having the outside covered with a thin crust and another which was solid for more than a quarter of the distance of its radius. In calculating he finds that the motion will not agree with the observed motion unless the crust is taken at a certain thickness; and, by his calculations, eliminating the errors that are likely to creep in from the rising of the fusing point which we described, he arrived at the result that the crust could not be less than 800 to 1000 miles thick and was probably much thicker.

Prof. Henessy does not agree with Mr. Hopkins, but contends that he has made his estimate much too large. In support of his assertion he has made some very useful researches and arrived at the opinion that the minimum thickness of the crust could not be less than 18 miles and the maximum thickness not likely more than 600 miles. In his demonstration he used expressions he had obtained "in which the variations of gravity at the earth's surface is a function of the radius and ellipticity of the fluid nucleus supposed to exist within," thus affording a method "of deducing the limiting values of the radius and consequently the thickness of the shell."

There have been some later opinions advanced that take a different bearing all together. It is now claimed that it is unnecessary to suppose that the earth ever existed in a fluid state, and that the interior heat may be explained by other means that are purely physical. One of our scientific writers of to-day says that the elliptical form possessed by the earth is no greater than that which would be assumed by the earth if it had always possessed as hard a crust as that of the present. He claims that the plasticity of the solid constituents of the surface is such that, with the present velocity of the earth around its axis, no other form could be maintained than that which the earth now possesses. That the earth is warmer as we approach the center our recent investigator does not deny, but claims that this can all be explained by physical and chemical forces.

Another theory, and one of anterior date to the above, claims that the earth has always been in a solid condition; and that the superior length of the equatorial diameter can be explained on considerations based upon the action of water. The promulgator of this says "we will suppose the earth to have been a perfect sphere and surrounded by water." Now if this was the case the centrifugal force caused by the rotation of the earth would cause the water to leave the poles and approach the equator. In this action it would wash and carry materials away from the poles, and, as the waters from both poles meet at the equator, deposit it there. Thus the polar diameter would be decreased while that of the equator would increase in a corresponding degree. To account for the interior heat of the earth, which is known to exist, the supporters of this theory also appealed to physical and chemical energy. They supposed that the earth was wholly solid at one time and the melted matter known to issue from volcanoes was due to the subsequent heat developed as I have before mentioned.

We thus see how difficult it is to arrive at anything like absolute certainty in regard to the thickness of the earth's crust. Even the latitude allowed by Prof. Hennessy of the difference of 18 and 600 miles shows the inability of any one to fasten on a definite distance.

THE ANTIQUITY OF MAN.

It is now scarcely fifty years since the question arose as to whether man had enjoyed a longer existence on this earth than the interpretations of Holy Writ would seem to indicate. Until within this short period we were content to consider 4004 years B. C. as the length of time man has occupied this sphere. It was an incorporated article of our faith and its violation would consign the transgressor to eternal punishment. Archbishop Usher, of Armaugh, made this computation and determined that that length of time had passed between the creation of Adam and the coming of Christ. "4004 years B. C.," was printed in the margin of the first chapter of Genesis, in the year 1701, but can no where be found in the narrative of the unknown author or authors of the Hebrew cosmogony. Philosophers and Geologists were at one in making all their investigations conform to these 6000 years. That this length of time was not sufficient to account for the existence of man, was evident from oriental narration. The written history of China and India extends back to nearly that date.

About the beginning of the present century Geology received an impetus from the researches of Cuvier and others in France. These men were collecting, studying and classifying the animal kingdom, both living and fossil. In the explorations they made, remains were found for which they could give no scientific explanation. Implements of stone, such as hammers, spear-heads, axes, etc., were found in various parts of different countries. These evidently pointed to the fact that there was a pre-historic, a pre-adamic man, for, with all the knowledge yet acquired, no animal but man was known to make use of such implements. The Indian and Esquimaux of America and the inhabitants of the Polynesian Islands, when first discovered, used tools similar in material and construction. Archaeologists concluded that these were left by man, and that in them could be found a clue to the difficult problem of his antiquity. They accordingly have divided the ages of man into (1) Paleolithic, (2) Neolithic, (3) Bronze, and (4) Iron.

The Paleolithic, or ancient stone age, is so called from the abundance of stone implements of a very crude manufacture. In caves in France the bones and other remains of man were found in connection with those of the cave bear, *Ursus spelæus*, cave hyæna, *Hyæna spelæa*, *Mastodon giganteus*, *Rhinoceros tichorhinus*, and *Elephas primigenius*. These were man's companions in his earliest existence; with them he seems to have lived, making their habitation his habitation. In those caves the debris is piled sometimes several feet thick, and alternate in layers with human remains and those of other animals. In this period of his existence he had weapons of defense, very crude, it is true, but, reasoning from his after progress, there must have been a time when he had not weapons, when he was defenceless and fled in terror before the animals of the field. He then betook himself to the caves for protection and shelter, not only from the elements but also from his enemies of the animal kingdom. The animals we find associated with him belong to the Tertiary period. Flint implements and their clip-

pings have been found in Abbeville in France, which were covered by glacial drift deposit to the depth of 100 feet, and even more in some places. Some of these have been found under the remains of *Elephas primigenius*. In this drift were found some boulders twenty feet in circumference, and Lyell says the only way they could have come there was by glaciers. Sir John Lubbock says the Paleolithic is the most ancient age of which we have any evidence of man; other scientists differ and think man must have existed before the glacial period. Not to one country or one locality are these remains confined. England, France, Spain, Belgium, Denmark, Norway, Switzerland, Brazil and India have each contributed testimony to the antiquity of man. J. Scot Moore thinks the Paleolithic era extended from 270,000 years before, to within 50,000 years of the Christian era. He based his opinion on the eccentricity of the earth's orbit combined with the discoveries of remains of man found in conjunction and associated with those extinct mammals. Others go a step farther, and think man must have lived even longer; that before the glacial epoch he must have peopled Denmark, and even gone as far north as Norway. At one time was mentioned a specimen of bone of the Mammoth, found near the Straits of Dardanelles. On it was engraved the representation of a horned quadruped, "with arched neck, lozenge-shaped chest, long body, straight fore legs, and broad feet." A flint flake, and bones, broken as if split for the marrow, were also discovered near the same place. This would not only prove the existence of man in the Miocene, but also that he was advanced in the arts. At first scientists accepted this as positive evidence, but they are now inclined to doubt it.

It appears from the evidence thus far accumulated, that man in the Paleolithic age knew nothing of the metals; they did not domesticate their animals; their utensils were still rough, and showed scarcely any skill in workmanship; skins and furs were used for their clothing; and that, towards the last of the period, they buried their dead in kists, as seen in Caithness in Scotland. The Reindeer era occupied a part of the Paleolithic age. It occurred in what some Geologists call, the Second Glacial epoch, which ushered in the Recent period.

Following the Paleolithic is the Neolithic period, and, as yet, there is no close connection exhibited between them. They do not seem to blend into one another with any degree of regularity. There is a link missing, but through subsequent investigation it will undoubtedly be found. Then the distribution of land and sea was much the same as it is at present. The Kitchen Middens, or *Kjokken-modding*, of Denmark, are classified as belonging to this time. They were immense accumulations of shells which have been observed on different points of the Danish coast, chiefly in the north, where the sea enters those dark creeks called fiords. These deposits are raised only about three feet above the level of the sea. They are from three to ten feet in thickness, from one hundred to two hundred feet wide, and sometimes 1000 feet long. Oyster shells, mammiferous remains of birds and fishes, and some roughly wrought flints were found in these heaps. The lake dwellings of Switzerland, pile dwellings, peat cities, and sand stations of nearly every country in Europe, are standing evidences of this period of man's progression. Animals were domesticated, pottery was made, and arrow and spear heads of polished flint, jasper, and rock crystal, were now used, and some of the cereals were cultivated.

The next, or Bronze age, brings man down to comparatively modern times. The distinguishing characteristic is the predominance and variety of bronze articles; as to how this alloy was made but little light has been thrown upon the subject. The dead were buried at full length in mounds built for the purpose, with their ornaments and weapons of the chase by their side. This age reaches and overlays the historic age of some countries. The Iron age is simply a continuance of the Bronze. More of the metals were manufactured and man reached a higher position in the arts.

From these facts it is seen that science has extended the time allotted to man to an indefinite degree; that earliest man, as we at present consider him, was a cotemporary of animals now extinct, and their extinction took place in or before the Glacial period; that man of the Paleolithic age succumbed to the cold, and, throughout the northern part of Europe, was almost entirely extinguished; that, during the Neolithic age, he traveled north to Denmark and there erected the "Kitchen Middens," while, at the same time, the lake dwellings of Switzerland were being built; and that, as man advanced in civilization, he became more and more cultivated, cereals were produced for food, and animals domesticated for his accommodation.

Now, the questions arise, whence came man; where did he originate; is he only a modified monkey, or was there a special creation by which the Creator placed him upon the earth to struggle for subsistence against the multitude of enemies he must necessarily encounter? Twenty-five centuries ago Anaximander said, "Man must have been born from animals of different form, for, whereas, other animals easily get their food by themselves, man alone requires long rearing; and no one, being such as he was originally, could have been preserved." In that paragraph he displays nearly as much knowledge of the creation of man as we, in this age of science, with propriety can give utterance. It is a problem left for future scientists to solve, if it is capable of a solution. Evolutionists can not explain it satisfactorily, and six thousand years *will not* account for the remains of man.

R. F. J.

LOCAL.

The oaken part of the local staff is out surveying during this month, and the twining portion is left in charge, hence the character of the department in the present issue.

General Geddes has been spending a few days in Vinton.

Prof. Budd has brought his family with him to the College.

The nobbiest things to be seen are the Senior's canes—so they think.

Prof. Pop's horse is under headway and will fulfill all expectations.

The south tower again proudly bears the golden pumpkin. Long may it wave.

We would call the attention of our readers to the letter of Prof. Wynn, in another column.

Prof. Fox is meeting with eminent success in his labors to develop the musical talent of our institution.

Funny as it may seem a stranger desires to possess the only Beard in the building. It is surely impolite to take the last.

Here is a sketch which was handed "ye local." "Junior gone—Saturday eve coming—Sophomore looking happy—Why?"

Wouldn't it be a good plan for the directors of certain lines to substitute caoutchouc tubes for the ordinary methods of communication?

The Faculty were down town at a party Saturday evening, and every student knew by his interrupted slumbers that they came home late.

The many different elixirs to hasten the growth of the beard are as nothing compared to shaving by moonlight.—So says the "King of the Piutes."

Scene, Geometry class. Prof. "How do you tell when one quantity is greater than another?"

Fresh. "Why, by looking at it."

Some folks think they will get "bites" by using frogs to bait their air-lines with, and others still more foolish make use of drowned specimens of *mus musculus*.

The drives on the College Farm are in excellent condition and the people of Ames enjoy them. It seems a pity that the students should have so little opportunity for this kind of recreation.

The steward is doing everything in his power to insure the health of the students, and yet there are a number of cases of sickness. Too much attention cannot be paid to regular habits by students.

Prof. C. E. Bessey is having his essay on "A Scientific Course of Study" published in pamphlet form to circulate among his friends. We are pleased to have been the first to give it to the public.

Prof. Wynn has received the merited compliment of the degree of Ph. D. from his *Alma Mater*. Being wholly unsolicited, it expresses the just estimation of his ability as a thorough scholar, and the respect in which he is held by eastern men.

Any person who will send us copies of THE AURORA for August 1874, July 1875 and May 1876, will be duly paid for the same and will thereby confer a favor. The Library desires to bind all the existing volumes and in making out a file we find ourselves short these numbers. Please look over your old papers and see if you cannot accommodate us.

A student—and, strange as it may seem, he was a Senior—mailed a letter to his chum during vacation and also one to his his own Amanda. Through some unforeseen cause the letter for Amanda, together with a new photo, was sent off in the

envelope directed to his chum; Amanda receiving chum's letter. When last heard from Amanda says, "To learn the inner workings of a man's mind, read his letters to a gentleman friend."

From a Junior comes this refrain:

"We asked for bread,
And they gave us a stone;
We asked for meat,
And they gave us a bone."

Our *special* reporter reports the specials as few and far between. They make up in strength what they lack in numbers, however. Our reporter adds, that Saturday evening it was beautiful to see the ladies of the institution promenading in couples and finally all sitting down around the reader of "Helen's Babies," while the gentlemen looked at them from their windows or promenaded dejectedly around the group, as the stars around the center of the universe.

He came into the recitation room looking weary and worn and took a back seat. The Professor fixed his gaze on him for a moment and then turned to his book. It was evident that a crisis had come and something desperate must be done.

"Well, Mr. S." said the Prof. after a moment's pause, "can you demonstrate the eighth corollary to the fifth proposition?"

"Prof.", he said earnestly, and at the same time drew a long breath, "you know Hamilton's great theory of the mind; that there are mammoth efforts put forth under peculiar circumstances—how beautiful strains of poetry are composed while the body sleeps but the mind remains active? Well, that's what ails me."

A "Rhyming madness" seems to have taken possession of some of our students. Here is an example which comes so near embodying the truth that it is thought a sin to suppress it. It is evidently the work of two minds, as no one could withstand the strain upon the system:

There is an affinity,
Known as the trinity,
Happy and fair;
If two you should see,
The other would be
Very near there.

Yea, great is the affinity
Between the sedate three,
Who constitute the trinity
Of the I. A. C.

Man may part them never,
Nor try the bonds to sever
That bind the happy three.
Unless you find another one
To carry off the homely one,
These bonds will always be.

PERSONALS.

'77. Kate Curtis has been at home on a short vacation.

'76. J. J. Snell still holds forth in Ogden, where he is doing finely.

'77. Miss Carpenter's health is improving. She will resume her course ere long.

'80. Miss Kate Doolittle is now at home, recruiting her health. She hopes to return soon.

'76. J. J. Fegtly sends us a postal at the eleventh hour. Glad to hear from him even so late in the year.

'79. C. C. Applegate has severed all visible ties which bound him to the institution and gone home to stay.

'79. Ida Wilson is now attending the large Normal school at Valparaiso, Indiana. She is succeeding as well there as she did here.

'78. Messrs. Burke and Mount are surveying the Narrow-Gauge route. They are expected to be at the College in about two weeks.

Agency for the Purchase of English Books

We received, some months since, the following notice of E. G. Allen's Agency, established in London forty years ago, for the purpose of supplying, at the least possible expense, American libraries with English books. We have been, for the last twenty years, personally cognizant of Mr. Allen's faithfulness to the interests of his American customers. When a resident in Washington ten years ago, we found that the immense Congressional library largely supplied its shelves through Mr. Allen's London Agency. Many of the extensive libraries belonging to the universities and colleges in the East, have also secured their foreign books from the same source, and we have heard from the officers of these institutions, frequent testimony to the scrupulous exactness with which their orders were always filled.

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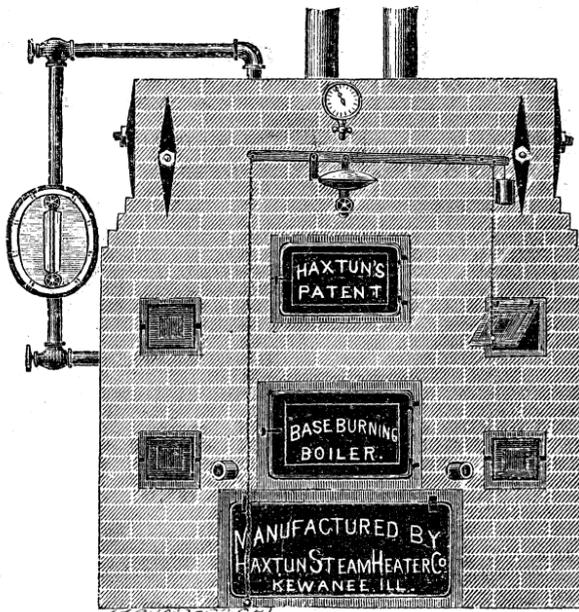
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The equipment and courses of instruction are full and complete. The library is supplied with all the standard literature and works of reference in science and art. The Chemical and Physical Laboratories are among the largest and best furnished in the country. The farm, garden and workshop, with their supply of machinery, implements and stock, present to the student the best specimens of industrial art, and the entire system of instruction and practice is calculated to prepare the student for the actual duties of life.

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Students pay actual cost for board, fires, lights, laundry, damages to college property when caused by themselves, care, lighting, warming and general repairs of the College building and furniture, and such other incidental expenses as specially belong to them as a body.

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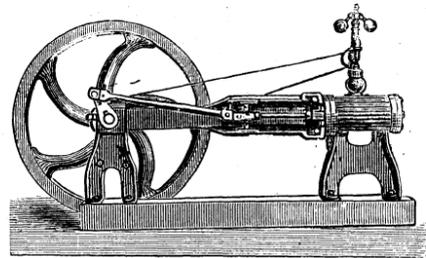
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