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The Cadet Staff

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THE CADET.

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No. 2.

THE COINAGE PROBLEM.



WITHIN the comparatively limited range to which this discussion of the great economic question of the day is necessarily confined, it is, of course, impossible to do more than touch upon some of the most important matters involved; anything like a full consideration of them or of the main subject itself must be left to articles justly more pretentious.

Volume after volume and essay after essay has been written upon the monetary problem, and the "Battle of the Standards" has been fought time and time again, and yet the ideas of our leading statesmen and financiers seem to be as divergent as if the silver question had arisen now for the first time.

Money being the universal standard by which the values of different commodities and services are compared, and in terms of which practically all business engagements are entered into, and all commercial transactions effected, it is essential that its own value, *i. e.* its own ratio in exchange with services and with other commodities in general, should remain as nearly constant as possible. This ratio in exchange, Congress cannot fix; it

may determine the number of grains of gold or of silver that is to constitute the dollar, but what this dollar will buy, its ratio in exchange, its value, is independent of legislation. The linear unit, the weight unit, the cubic unit, can be arbitrarily prescribed, once for all. But such a thing as an arbitrary exchange unit, unvarying in value is impossible, for this value depends on factors which are not susceptible of measurement, and which are themselves ever varying.

In the ratio in exchange of the dollar, the monetary unit is one member, the commodities or services for which it is exchanged, the other; hence, the increasing or diminishing demand or supply, on the one hand of the money, on the other, of these commodities or services, alike affect the value of the dollar. The variation of the second term affects the ratio as much as does the variation of the first term.

A perfect standard of value being then, unattainable, it becomes a matter of the greatest importance to secure a standard approximating as nearly to constancy as possible.

From the dawn of civilization na-

tions have employed gold and silver as a monetary standard; sometimes together, bimetallism; sometimes singly, gold or silver monometallism.

Bimetallism has always been the monetary policy of the United States with the exception of the interval between the years 1873 and 1878, during which gold was the sole standard in our coinage system.

But within the past twenty-five years, owing (1) to the decrease in the demand for silver from its general demonetization or restriction in coinage by the nations of Europe, (2) to the increased value of gold from the increased demand for it caused by these nations adopting it as their sole or chief monetary standard, and from its greatly increased use for industrial purposes and in the arts, and (3) from the greatly increased production of silver from the mines,—the value of silver in terms of gold has so decreased, (or the value of gold in terms of silver has so increased) that this country can no longer hope through the demands of its own people for silver as a circulating medium to effect a permanent conformity of the commercial ratio in exchange between the two metals to any coinage ratio that may be established.

Hence, aside from those temporary expedients and makeshifts which more than anything else have placed us in our present dilemma, there are but three solutions to the coinage problem possible:

1. The adoption of gold as the sole standard;
2. The adoption of silver as the sole standard;
3. The adoption of, and persistence in, some definite policy to bring the nations of Europe to join with us in maintaining silver as a money

material by the general establishment of the bimetallic system.

In discussing the proposition to adopt gold as the sole standard, the first and main question is, Will gold as the standard remain approximately stable in value, i. e. in its general ratio in exchange?

If it were a matter of no moment that the purchasing power of gold increases, then, of course, there would always be gold enough at some value to carry on the business of the world. But an appreciating monetary standard involves hardships for the debtor classes, continuing and disastrous financial stringency, and business depression. Increasing value of the monetary unit means a general falling of prices, and of the results of falling prices, Professor Marshall well says: "A fall in prices lowers profit and impoverishes the manufacturer, while it increases the purchasing power of those who have fixed incomes. So, again, it enriches creditors at the expense of debtors; for if the money that is owing to them is repaid, this money gives them a greater purchasing power, and if they have lent at a fixed rate of interest, each payment is worth more to them than it would be if prices were high. But for the same reason that it enriches creditors and those who receive fixed incomes, it impoverishes those men of business who have borrowed capital, and it impoverishes those who have to make, as most business men have, considerable fixed money payments for rent, salaries, and other matters."

To maintain the value of gold as it is at present, the present relation between the supply of this metal and the demand for it must be maintained. Can it be done? In 1870, England was the only nation having the gold

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monometallic system; to-day, the coinage systems of all the great nations of the world are practically on this basis.

In 1892, the total production of gold was \$138,000,000. This amount is larger than that of any year since 1856, and is exceeded only by the product of this latter year and that of 1853; yet, in comparison with the present demand for the yellow metal, its supply is relatively decreasing. This is shown by the constant and general tendency of agricultural products to fall in price during the past twenty years. The decrease in price of manufactured commodities might be explained in part by improvements in labor saving machinery, changes in the tariff, and increasing extent of division of labor; but approximately the same amount of human effort is required to raise a bushel of wheat or of corn to-day as was required twenty years ago. Farm products in terms of gold have fallen during the last two decades at least 25 per cent. in value, or, conversely, gold has risen during the same time in terms of farm products, $33\frac{1}{3}$ per cent. in value.

Can silver be safely adopted by the United States as the sole standard, either through express legislation or as a consequence of the farther coinage of this metal? Or, to put the question in another form, can our country alone absorb enough silver in its circulation to restore and maintain the general purchasing power that this metal possessed twenty-five years ago?

In 1870, the coinage value in our standard dollars of the world's production of silver was \$51,000,000; in 1892, \$196,000,000; in the latter year the amount used in the arts and industries was not far from \$45,000,000, so that there was left free for

coinage purposes over \$150,000,000.

To sustain any appreciation of silver that might result from our efforts to raise the general purchasing power of this metal by freely coining it, practically all the product available for coinage—which would be vastly increased by the greater output from the mines caused by the increased value of the metal—must be absorbed in our circulation. And not only this, but the additional demand in this country for silver, which must be the necessary concomitant of its appreciation, would be met by an inflow from the other nations until the scarcity of silver abroad would increase its value everywhere to the extent of its appreciation here.

The amount of silver money of full tender in use outside the United States is not far from \$2,800,000,000. The amount of old silver in other forms than coin available for coinage purposes in the event of its appreciation, though great, cannot be estimated; but the conditions that can be fairly determined show that any attempt on the part of the United States alone to cause an appreciation in the general purchasing power of silver, or even to arrest its depreciation must necessarily fail. The failure of the Bland Act of 1878 that provided for the yearly purchase and coinage of at least \$24,000,000, and of the Sherman Act of 1890, which increased this purchase to \$69,600,000, shows the futility of our efforts in this direction. Not only after these measures became laws was there no check in the depreciation of silver, but its downward tendency seemed even more rapid than before. The failure of the Sherman Act to accomplish the purpose for which it was designed is all the more striking from the fact that the amount of silver

to be annually purchased was about equal in amount to the average annual coinage of both metals for the ten preceding years.

If our course of reasoning is thus far correct, the United States seems to be between a financial Scylla and Charybdis; two evils to choose from, and one must be chosen. On the one side, the continuous appreciation of gold; on the other, the rapid depreciation of silver.

From the basis of the prices of agricultural products, my estimate is, that from 1870 to the present time the general purchasing power of gold has increased about 33½ per cent., and during the same period the general purchasing power of silver has decreased about 40 per cent.

That there is not enough gold to furnish a sufficient basis for the monetary systems of the world is a well established fact. True, the means for facilitating exchanges through the development and extension of the credit system have wonderfully increased; but, as the credit system expands, if its foundation, the actual value money be not extended with it the whole financial structure will be unsafe, and disastrous crises and panics will come with an unfailing regularity.

The production of silver relative to the business of the world, to its need for an increasing circulating medium, has not been excessive. Its depreciation has been due to its general demonetization rather than to its increased production.

A general agreement on the part of the great commercial nations to adopt the bimetallic system at some common coinage ratio between gold and silver, limiting the maximum quantity of the latter metal to be coined by each

nation at some fixed per capita amount, and an arrangement for each country to make the coins of the others legal tender within its own boundaries, would, by increasing the demand for silver and decreasing the pressure for gold lessen the divergence in value between the two metals and act as an automatic regulator in keeping their commercial ratio in exchange practically the same as their general coinage ratio; for a tendency towards depreciation of either metal would be checked by the increased demand for this metal for coinage because of this very depreciation, while the demand for the other metal being lessened, would, from this cause tend to decrease its purchasing power to that of the overvalued metal. No tendency to export or to import either would follow a temporary divergence of the commercial ratio from the coinage ratio, as would be the case were one nation alone to endeavor to maintain the parity of the metals in its monetary system.

England at present holds the key to the situation; as the great creditor nation of the world her policy has been to hold to the appreciating standard. The other nations of Europe recognize that they must follow the example of that country as a matter of self-defense; any other policy means the increasing of her power to control the world's supply of gold and to make the financial policies of other countries wait upon her own.

What the nations of Europe have recognized and acted upon, it becomes the policy of the United States to recognize and act upon. The "scramble of the nations for gold," as it has aptly been called, will reduce itself simply to a question of endurance. Even the most ardent of the

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English monometallists cannot shut their eyes to the evils with which the general demonetization of silver threatens the business world. This country with the nations of Europe, including England, is at present suffering from the depression incident to an appreciating standard. To attempt to relieve the stringency by the coining of more silver, or the issue of treasury notes, is to weaken our own position and to strengthen the hands of our great opponent.

The advantages of the United States lie in the fact of our immense natural resources, of the general well-being of our people, that the European nations, and especially England

are so largely dependent on us for their food supply, and that so large an amount of the precious metals are produced in this country.

Between the evil of a depreciating silver standard and the evil of an appreciating gold standard the United States must apparently soon choose; the former would be lasting; the latter if resolutely endured, would, within a comparatively short period, inevitably lead to some system of international bimetallism among the great commercial nations similar to that which

existed among the members of the Latin Union; and this, according to the views of the writer, is the true solution of "The Coinage Problem."



DETERMINATION OF THE HORIZONTAL COMPONENT OF EARTH'S MAGNETIC FORCE.



MAGNETIC attraction, measured at different places on the earth's surface, like gravitation, is exerted through the surrounding medium; therefore the space enclosing a magnet traversed by directing forces, so that a needle placed near the magnet has a force acting upon it and tending to make it remain in a certain position. The region around a magnet is traversed by the forces in which a needle free to move upon its pivot tends to make a definite position is called a magnetic field. The universal tendency of the magnetic needle to turn so as to point north and south is proof of a magnetic field surrounding the earth. Such a needle in a magnetic field will place itself parallel to the resultant force if it acts in a straight line and tangent to it if it acts in a curved line. If we represent the direction of the resultant by imaginary lines in different parts of the magnetic field we may call them lines of force.

The unit of measurement is called the dyne, which may be defined as the force existing between two similar unit poles whose distance apart is one centimeter.

It is known that the earth's field is variable both in direction and intensity of its lines of force. Consequently the horizontal component of the earth's force varies from time to time when measured at the same place, also at the same time when

measured at different places on the earth's surface. The object of this paper is to describe a series of experiments performed in the physical laboratory to find the intensity of this force for Orono.

There are several methods of doing this and the one used is considered quite accurate. Since a positive pole in the earth's field is acted upon by a force in one direction and a negative pole by an equal force in the opposite direction, the turning of the magnet is due to the combined action of two equal and opposite forces on the ends of the magnet. This is in the form of a couple whose value is $M H$, where M equals the moment of the magnet and H equals the magnetic force, or intensity of the field. When the magnet makes an angle, a , with the lines of force the couple equals $M H \sin a$. Therefore the effect of the earth's field simply tends to turn the magnet to a position where its potential energy is a minimum and its equilibrium stable. Therefore the earth's influence is simply directive.

If we let a freely suspended magnet come to rest it will take a position at an angle with the horizontal plane unless it be at the magnetic equator, where it will be horizontal; this depression is called the inclination, or dip. If T , Fig. 1, represents the direction of the axis of a needle of an

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Now as $2 f l = (\text{strength} \times \text{distance}) = \text{moment of magnet}$, we may

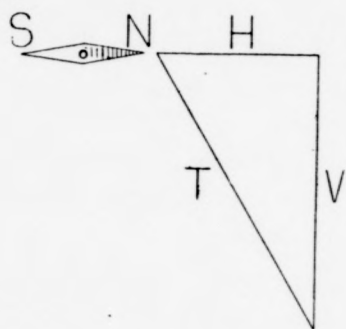


Fig. 1.

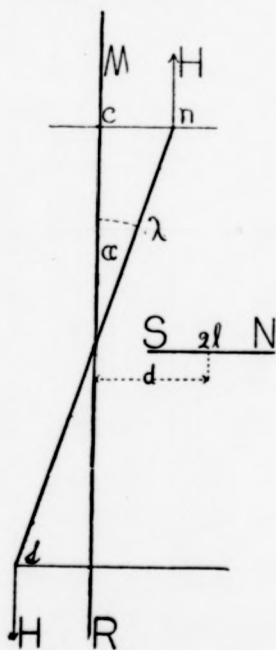
$$\frac{M}{H} = \frac{d^3 \tan \alpha}{2}.$$


Fig. 2.

call this M.

$$\text{Then } \frac{M}{H} = \frac{(d^2 - l^2)^2}{2d} \tan a.$$

As d is great in comparison with l this becomes :

$$\frac{M}{H} = \frac{d^3 \tan a.}{2}$$

Having proved the formula we perform

THE DEFLECTION EXPERIMENT.

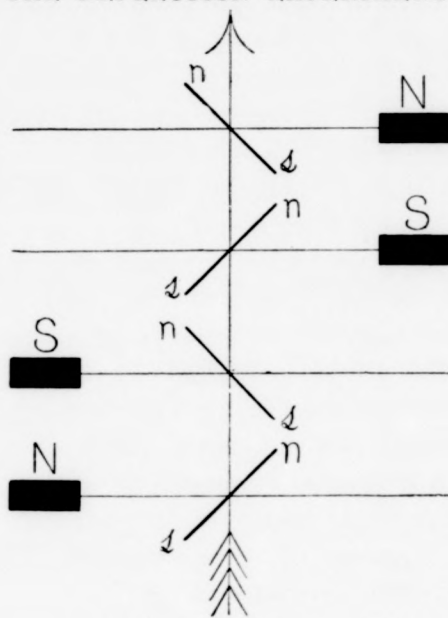


Fig. 3.

This consists in making proper adjustments and reading the deflections for different positions of the magnet and at different distances from the magnet. In order to eliminate errors as far as possible, readings were made at four positions and the mean taken, and results were obtained as shown in the table of records. Then finding the mean value of $\frac{M}{H}$ we have $\frac{M}{H} = 933.67137+$.

The value of M H has to be determined and this is done from the formula, $t = \pi \sqrt{\frac{I}{M H}}$,

In which t = time of vibration.

M H = moment of mutual action of magnet and earth.

I = moment of inertia, and is obtained from the formula,

$$I = W \left(\frac{l^2}{12} + \frac{r^2}{4} \right)$$

In which W = weight of magnet in grams,

l = length in cm.

r = radius of cylindrical magnet in cm.

RECORDS.

	Position.	Distance of Magnet from Needle.	Deflection (a)	Mean	Tan a	$\frac{M}{H}$
Experiment 1—	1	20 cm.	12.50			
	2	"	14.50			
	3	"	12.50			
	4	"	14.50	13°.5	0.242385	969.54
" 2—	1	25 cm.	6.75			
	2	"	7.25			
	3	"	7.50			
	4	"	6.375	6°.968	0.1222	954.68
" 3—	1	30 cm.	4.00			
	2	"	4.00			
	3	"	3.50			
	4	"	4.50	4°.	0.06993	944.05
" 4—	1	35 cm.	2.50			
	2	"	2.50			
	3	"	2.75			
	4	"	2.00	2°.875	0.04257	912.59
" 5—	1	40 cm.	1.875			
	2	"	1.50			
	3	"	1.25			
	4	"	2.00	1°.906	0.02839	908.48

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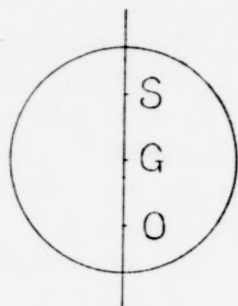


Fig. 4.

In Fig. 4, let us consider a compound pendulum, and a simple pendulum whose length is S O and which vibrates in the same time.

Let S G = l = length of pendulum.

" S O = λ = length of an equivalent simple pendulum.

" M = mass of system.

Let the system be displaced so as to make an angle θ with the vertical.

The energy which it will have when it falls a distance $h = Mgh$, where g = acceleration of gravity.

Let k = radius of gyration.

Let ω = angular velocity. Then energy also = $\frac{1}{2} M \omega^2 k^2$. But $h = l (\cos \theta' - \cos \theta)$, where θ' = angle made with the vertical after falling through h .

$$\therefore \omega^2 = \frac{2 g l}{k^2 (\cos \theta' - \cos \theta)}.$$

In case of a simple pendulum $v^2 = 2 h g$ = (placing λ for l in the pre-

vious equation) $2 g \lambda (\cos \theta' - \cos \theta)$. Let $\omega' =$ angular velocity of simple pendulum.

$$\begin{aligned} \text{Then } v &= \lambda \omega', \quad v^2 = \lambda^2 \omega'^2, \quad \text{and} \\ \omega'^2 &= \frac{2 g \lambda (\cos \theta' - \cos \theta)}{\lambda^2} \\ &= 2 g \left(\frac{\cos \theta' - \cos \theta}{\lambda} \right) \end{aligned}$$

Comparing the value of ω^2 and ω'^2 we see that for angular displacements

$$\omega = \omega', \quad \text{when } \frac{1}{k^2} = \frac{1}{\lambda} \quad \text{or } l \lambda = k^2.$$

Now $m \lambda l = m k^2 = I'$, where I' is the moment of inertia about S.

For a simple pendulum whose length is λ .

$$t = \pi \sqrt{\frac{\lambda}{g}} \quad \text{where } \lambda = S O = \frac{k^2}{l}$$

$\frac{M k^2}{M l} = \frac{I}{M l}$, where I is the moment of inertia about the vertical axis of support, which equals $W \left(\frac{l^2}{12} + \frac{r^2}{4} \right)$.*

$$\therefore t = \pi \sqrt{\frac{I}{M g l}}.$$

In the magnetic pendulum a magnet is vibrated in the horizontal plane and if M is the moment of the magnet, and H the horizontal component of the earth's magnetism the directive force will be $M H$, and the formula becomes:

$$t = \pi \sqrt{\frac{I}{M H}}$$

* The proof of this formula is as follows:

I represents the moment of inertia.

I for each circular lamina of thickness dx about its diameter is:

$$d x \int_0^{2\pi} \int_0^r \pi u s^2 ds d\theta,$$

where r is the radius of the cylindrical magnet, μ is mass of unit area, s is variable radius, and θ the variable angle.

From this:

$$I = \frac{\pi \mu r^4 dx}{4}.$$

I for each lamina about axis of support is:

$$\frac{\pi \mu r^4 dx}{4} + \pi \mu r^2 x^2 dx.$$

Or for whole cylinder:

$$\begin{aligned} I &= \int_{-\frac{l}{2}}^{\frac{l}{2}} \left(\frac{\pi \mu r^4}{4} + \pi \mu r^2 x^2 \right) dx. \\ &= \pi \mu r^2 l \left(\frac{r^2}{4} + \frac{l^2}{12} \right) \\ &= W \left(\frac{l^2}{12} + \frac{r^2}{4} \right) \end{aligned}$$

From this formula we may determine the value of M H by

THE VIBRATION EXPERIMENT.

From the mean of ten readings the time of vibration was found to be 7.8176 seconds. Then in formula :

$t = 7.8176.$
 $\pi = 3.1415927+$
 $I = W \left(\frac{l^2}{12} \times \frac{r^2}{4} \right).$

In which : $W = 13.609$ grs.
 $l = 10.27$ cm.
 $r = 0.2343$ cm.

$I = 119.8013879.$
Substituting the values and we have : $M H = 19.234.$
From the previous experiment :
 $\frac{M}{H} = 933.67137.$
From which $H = 0.1435.$

O. L. Grover, '95.

TABLE FOR COMPARISON.

Place.	Horizontal.	Latitude.
Washington.....	0.2026 Dyne	38° 53'
Philadelphia.....	0.1978 "	40°
New York.....	0.1872 "	40° 43'
Boston.....	0.1704 "	42° 21'
Portland	0.1614 "	43° 50'
Orono	0.1435 "	44° 54'
Montreal	0.1474 "	45° 30'



“Neither the naked hand, nor the understanding, left to itself, can do much; the work is accomplished by instruments and helps, of which the need is not less for the understanding than the hand.”

—Bacon.

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THE PROGRESS OF SCIENCE.

"The work of Science is to substitute facts for appearances and demonstrations for impressions."

—RUSKIN.

THE KINETOGRAPH.

ONE of the subjects which is at present engaging the attention of Mr. Edison is the perfecting of the instrument called the kinetograph. What the phonograph is to the ear this instrument is to the eye. The actual movements of a body are to be reproduced just as they occurred.

The principle upon which this instrument depends is the ability to produce at least forty-six instantaneous photographs of a moving body in a second. The number forty-six is chosen because to the normal eye impressions which are one-forty-sixth of a second apart appear continuous. If then, the appearance of an orator is photographed forty-six times in a second, and these photographs are passed before the eye at the same rate of speed, the impression given is that of continuous movement.

Edison proposes to have the view thrown on a screen by a stereopticon and then they may be made life size. In future generations by the aid of a kinetograph and phonograph the speeches of Depew, Ingersoll and others may be reproduced, and at the same time their actual attitudes, gestures and facial expressions may be witnessed by the audience.

SECTIONAL LENSES.

Louis Gathman, an optician and astronomer living in New York, has recently offered to construct a telescope with an objective ten feet in diameter; and with the requisite financial aid to construct another with

an objective of one hundred feet. While it is probable that a long period will elapse between the making of these statements and the completion of the instruments, yet it is at least within the range of possibilities that telescopes of vastly greater power than those at present used may be constructed.

The difficulty in constructing large telescopes is confined almost exclusively to the objective. The largest one attempted thus far is forty inches and is being made for Chicago University. In making a lens of this sort the utmost care has to be taken to avoid any imperfection in the glass which would interfere with the passage of light. Air bubbles are a frequent source of annoyance and render useless a lens however perfect in other respects.

The method proposed by Mr. Gathman is to make the lens in sections. Any number of small, perfect lenses may be made, and these consolidated into one large one. There are many difficulties in this last step but they are of such a nature that they may be overcome,—at least so thinks the inventor.

With lenses of this sort there is practically no limit to the power which may be reached by a telescope. Whether the one proposed would be sufficient to see the inhabitants on Mars, might be questioned. There is little doubt, however, that if the inhabitants are of as high order of intelligence as those of the earth, there would be seen evidences of their existence.

A SKETCH OF THE HISTORY OF MATHEMATICS.



IN the preceding paper its principles to the bottom and the assertions made were investigated its theorems in an more of a speculation than intellectual manner." fact. When we reach the foundation of the Pythagorean and Ionian schools there is every proof that the history is correct.

Thales, the founder of the earliest Greek school of mathematics, was born at Miletus about 640 B. C., and lived to be about ninety years of age. His early life was spent in business pursuits and it was not until he became middle aged that he began his studies of mathematics and philosophy. There is nothing which enables us to form an idea how he presented his teaching, but we are led to believe that he used deductive methods instead of the induction used by the Egyptians. There are seven propositions which we can with certainty refer back to him: The angles at the base of an isosceles triangle are equal; if two straight lines cut one another the vertically opposite angles are equal; a triangle is determined if its base and base angles be given; the sides of equiangular triangles are proportionals; a circle is bisected by any diameter; the angle in a semi-circle is a right angle. The proof of these was probably experimental in most cases, as in the first he made two equal isosceles triangles and placed them together, first one face and then the other. The next man of great importance in this connection was

Pythagoras. It was he who "changed the study of geometry into the form of a liberal education, for he examined

Although Pythagoras was a philosopher and moralist his works rested on a mathematical basis. He formed a school or really a brotherhood which has been called "the Pythagoreans." They held the same beliefs, followed the same trades and were bound by oath not to reveal the teachings of the school.

In their work on mathematics the Pythagoreans divided the subject into four divisions: numbers absolute, or arithmetic; numbers applied, or music; magnitudes at rest, or geometry; and magnitudes in motion, or astronomy. Nearly all the propositions deduced by this school are on the geometry of areas. It seems from what we can learn that they were familiar with several of the propositions in Euc. I and also some of those in books II and V.

Archytas (400 B. C.), who was at the head of the Pythagoreans a century after the death of their founder, was the first to apply their knowledge to mechanics. It is said that he invented and worked out the theory of the pulley. He was the first to solve the problem: to find the side of a cube whose volume shall be twice that of a given cube. We see from this the knowledge of the Pythagorean school at that time was very considerable.

At the end of the fifth century we find that the scholars began to look to Athens as the center of education.

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The teachings of the Athenian school began with Hippocrates about 420 B. C; the labors of Plato and Eudoxus helped to give the school a permanent basis. Hippocrates wrote the first text-book of geometry, on which Euclid's "Elements" was probably founded. He discovered that similar segments of a circle contain equal angles; that the angle subtended by the chord of a circle is greater than, equal to, or less than a right angle as the segment of the circle containing it is less than, equal to, or greater than a semicircle. He probably discovered several other of the problems given in Book III of Euclid. His most celebrated discoveries were in connection with the quadrature of the circle.

To Eudoxus is attributed the discovery of the greater part of the propositions in the fifth book of Euclid. He also proved Euc. XIII, 1, 2, 3, 4 and 5. He applied the curve called Bernoulli's liminscate, whose equation is $r^2 = a^2 \cos 2\theta$, to explain the apparent progressive and retrograde motions of the planets.

The first man to study the properties of conic sections was Menaechmus. In his proofs he did not take different plane sections of the same cone but kept his plane fixed and cut it by different cones. He also gave two solutions for duplicating a cube, one of which is the following: Two parabolas having a common vertex, axes at right angles, and such that the latus rectum of the one is double that of the other, will intersect in another point whose abscissa gives the solution; for if the equations are $y^2 = 2ax$ and $x^2 = ay$ they intersect in a point whose abscissa is given by $x^3 = 2a^3$.

The third century before Christ produced the three greatest mathema-

ticians of antiquity: Euclid, Archimedes, and Apollonius. The mathematical department of the first university ever founded, that at Alexandria, was placed under charge of Euclid. He is principally known from his "Elements," this contains a summing up of all the previous work on geometry. The arrangement and way of proof is however wholly due to him. No one had before written in a logical manner the enunciation, statement, construction proof, and conclusion. The fact that this work has been the recognized text-book on the subject for nearly two thousand years demonstrates that the ability of Euclid can hardly be overestimated. Euclid also wrote a treatise on geometrical astronomy.

Aristarchus, who was an astronomer rather than a mathematician, lived at about the same time as Euclid. He asserted that the earth revolved around the sun, and his propositions on the measurement of the sizes and distances of the sun and moon were approximately correct. One of his writings which is extant contains nineteen theorems on this work.

We now come to the works of Archimedes about which there are so many fables. While these are mostly improbable, the one about burning the Roman ships by the means of burning glasses is not so improbable as it seems, for a glass has been made which set fire to wood at a distance of 150 feet.

The best known of the works of Archimedes are on mechanics: "Mechanics," which contains twenty propositions in two books, a treatise on levers and a work on floating bodies containing nineteen propositions.

This last work was the first attempt to apply mathematical reasoning to

hydrostatics. He began the work by diameters. Though his proofs were proving that a fluid at rest is spherical, also that the pressure of a fluid on a body is equal the weight of the fluid displaced. Archimedes also wrote several books on geometry and one on the construction of the celestial sphere. The value may be appreciated from the fact that all text-books on statics rested on his theory of the lever until the work of Stepmus was published in 1586. Archimedes was the greatest mathematician of antiquity and never has been surpassed except by Newton.

This century was the most brilliant era of Greek mathematics and it was nearly 1800 years before any further advance was made in geometry. Of Greek astronomers, Hipparchus was the most eminent. All his works of value were lost, but Ptolemy's great treatise, the *Almagest*, was founded on the observations and writings of Hipparchus. His principal discoveries were: inclination of the ecliptic and equator 23deg. 51m., annual precession of the equinoxes 59sec., lunar parallax 57m. He called the eccentricity of the solar orbit 1-24. His investigations led to trigonometry and he is now credited with the invention of that subject.

Another of the mathematicians who lived in the second century B. C., was Hero. He is alluded to as a brilliant mathematician but probably did not add a great deal to what had already been done.

L. R. F., '95.



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MATHEMATICAL NOTES.

In this number we give a question in mathematics and the solution, and also two questions to be solved for the next issue. This department is opened to all our readers, and the best arranged solutions will be published.

$$1. \quad x \sin 3\theta - y \cos 3\theta = a \sin 2\theta (\cos 2\theta)^{1/2} x \cos 3\theta + y \sin 3\theta = a (\cos 2\theta)^{3/2}$$

Eliminate θ , thus forming a single equation in x and y .

$$2. \quad \begin{aligned} b x^2 - a x y - c y + b &= 0 \\ a y^2 - b x y - c x + a &= 0 \end{aligned}$$

Find values of x and y .

A sum of \$10,000 is loaned at 4 per cent. at compound interest. At the end of the first year a payment of \$400 is made; and at the end of each following year a payment is made greater by 30 per cent. than the preceding payment. Find in how many years the debt will be paid.

SOLUTION BY NILES, '96.

Let s equal sum loaned.

- " r " rate.
- " $1+r$ " R .
- " P " first payment.
- " r^1 " rate of increase.
- " $1+r^1$ " R^1 .
- " n " number of years.
- " A " am't of sum loaned for n years.
- " A^1 " " " the several payments.

By the formula for the amount at compound interest we have $A = S R^n$. Since the payments are to equal the amount of the sum loaned, we must have $A^1 = A = S R^n$, (1).

The sum due at the end of the first year = P

second " = $P R + P R^1$

third " = $P R^2 + P R^1 R + P R^{1^2}$

n th " = $P R^{n-1} + P R^1 R^{n-2} + P R^{1^2} R^{n-3} + \dots + P R^{1^{n-1}} R^{n-n}$.

Therefore $A^1 = P R^{n-1} + P R^1 R^{n-2} + P R^{1^2} R^{n-3} + \dots + P R^{1^{n-1}} R^{n-n}$, (2).

Multiplying (2) by $R^1 R^{-1}$ we have:

$A^1 R^1 R^{-1} = P R^1 R^{n-2} + P R^{1^2} R^{n-3} + \dots + P R^{1^{n-1}} R^{n-n} + P R^{1^n} R^{-1}$, (3).

Subtracting (2) from (3) we get:

$A^1 R^1 R^{-1} - A^1 = P R^{1^n} R^{-1} - P R^{n-1}$.

$$A^1 = \frac{P R^{-1} (R^{1^n} - R^n)}{R^1 R^{-1} - 1} = \frac{P (R^{1^n} - R^n)}{R^1 - R}$$

Therefore substituting the value of A^1 in (1) we have:

$$S R^n = \frac{P (R^{1^n} - R^n)}{R^1 - R}$$

Clearing of fractions, transposing and uniting we have:

$$P R^{1^n} = R^n [S (R^1 - R) + P].$$

$$\left(\frac{R^1}{R}\right)^n = \frac{S (R^1 - R) + P}{P}$$

$$n \log \frac{R^1}{R} = \log \frac{P + S (R^1 - R)}{P}$$

$$n = \log \frac{P + S (R^1 - R)}{P} \div \log \frac{R^1}{R}$$

$$= \log [P + S (R^1 - R)] - \log P - \log R^1 + \log R.$$

Substituting the values of P , S , R , R^1
 $n = 9 +$.



THE CADET.

EDITORIAL STAFF.

FRANK DAMON, '95,

ALBION MOULTON, '95,	E. E. GIBBS, '96,
L. R. FOLSOM, '95,	P. D. SARGENT, '96.
W. W. CHASE, '95,	H. A. WHITE, '97.

BUSINESS STAFF.

C. J. PATTEE, '95,	S. J. STEWARD, '96.
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As our attempt at illustration was apparently so well received last month, we have essayed, although at no small expense, the same thing in this issue. We are very glad to be able to present a likeness of Pres. Harris, and we trust this may prove acceptable to our readers and especially to those of the alumni who have not had the pleasure of meeting him. It is with satisfaction that we bring to the attention of our electrical friends the article by Mr. Grover, and we are sure they will deem it of more or less value as the result he gives is the only one ever obtained for Orono. We regard the article by Prof. Rogers as coming at a most opportune time, for of course even the most casual observer of the financial situation must feel an unusual interest at the present time in watching the changing phases of this question.

* * *

THE game with Bates on May 15, brought out something we were heartily glad to see, namely, the collage color. It seems to be a fact that we lack to a large extent that hearty college feeling

which is one of the traditions of so many schools and which is valuable and desirable in so many ways. College yells, colors, canes, etc., are not much of themselves, but they certainly serve to inspire loyalty and enthusiasm to no small degree. It is earnestly to be hoped that in the future the M. S. C. Blue may be freely displayed on all suitable occasions.

* * *

OUR first annual athletic Field Day has come and passed and we feel that we can call it on the whole, a success. All that we could hope to do was to get a start and to awaken an interest in this branch of athletics and this we have done to a greater or less extent. In view of the records we made this year without the benefits of coaches, and hardly knowing how to conduct such an event, it is not too much to say that with the material we have, we shall have something to say next year that will be worth hearing.

* * *

THE recent decision of the University of Virginia to admit women to the academic course is somewhat significant, as it is among the first of southern universities to make this move. If this sort of thing continues we shall soon have to think of the southern lady as more like her northern sister and less like the pen pictures of her so often seen. Just at this time when the question of suffrage is agitated, all these little

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things are as straws that show the direction of the wind, viz. : the advancement of her sex.

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IN the current number of *Education*, Mr. E. P. Powell of Clinton, N. Y., has a paper on "Difficulties of our smaller colleges," in which he shows clearly a disposition to get out of old ruts and upon the level of the ideas of present progress in educational matters. In this, the first paper, he presents facts which we have had thrust upon our attention somewhat rudely before, viz : a lack of funds and other similar inconvenient conditions. It seems to us that if he had our own college in mind he could not have given better expression in some respects to its difficulties.

* *

THIS is one of the times of the year when the most prominent cloud on the horizon is the examination week, which means hours of hard study for some, and we will only just whisper it, perhaps, hours spent in the ingenious arrangement of microscopic editions of different text-books.

Speaking of examinations it is very noticeable what a change there has been in the ideas of educators upon this subject since fifteen or twenty years ago. Then they seemed to go to one extreme and the examinations in all schools, from high schools and academies up, were events of very great importance and country.

display, whereas now in some quarters there seems to be a tendency to go to the other extreme and these ordeals are made as simple as possible. We shall not discuss whether these tests are conducive to dishonorable acts or not, but it seems to us that an examination on honor is the best by all means, because it is a fact, that students who would under no circumstances do a mean act, are very apt to deem a little help of some kind on this occasion as justifiable and if a fellow *will* "pony" he will manage to find a way to do it if there is an instructor standing by each leg of his chair. But putting a fellow on his honor is quite another thing, that is, if he is a man.

* *

We see that the Sophomores of William's College have taken a decided stand in the matter of using unfair means in exams, and propose to make it a matter of honor strictly, any breach of which shall be treated summarily by the student's committee.

* *

THE Practical Text-Book Company of Cleveland, Ohio, have very kindly sent us a copy of their "Everybody's Dictionary."

This book may be carried in the vest pocket and contains 33,000 words. It is the most useful and handy little volume we have seen for some time and should be a good selling article for agents. The publishers want agents in every school and college in the country.



LOCAL NOTES.

"Master, Master! News, old news, and such news as you never heard of!"

—The Taming of the Shrew,—Act III, Sc. 2.

Toot a coop.

Support me higher.

Orono affords delicious soda!

To de right and to de left.

Bates couldn't beat the band.

Morse:—The Edison of Maine State.

Brevity personified:—

a. Our assistant janitor.

b. Charlie White's haircuts.

"In the spring a young man's footsteps lightly turn to Orono." Dusty Road Manter.

Those Jersey mosquitoes are again making themselves extremely numerous.

Calderwood, '95, has returned to college after an absence due to sickness.

Duncan, '95, has gone to his home in Massachusetts on account of illness. He thinks of staying out a year and entering '96.

If M. S. C. could put up the game right along that they did against Milford, they would not have any trouble in bringing home the flag.

The Q. T. V. society has put in a culinary department in their chapter house and now they are all accommodated by boarding at home.

The Freshmen complete Trigonometry this term. Their afternoons during the last of the term have been taken up in completing botany collections.

Professor Hart was confined to the house about three weeks by illness and during that time his classes in Mathematics received quite a vacation. Lieut. Hersey heard the classes for a few days.

Providence was exceedingly kind to the Cadets on Memorial Day, sending forth gentle showers and saving them from the "parade down Perkins Ave. and a march through seven cities."

The innumerable "kids" who are such ardent supporters of the Orono High school nine will make excellent Colby students in some future time if their lungs keep on developing.

Another new regulation posted is the following: No public entertainments except those held on the college grounds shall be given by any body of students, class or other college organization without the consent of the faculty.

The Sophomore class was entertained by President and Mrs. Harris at their home on the evening of May 17. A most agreeable evening was passed in playing games progressively, prizes being given to those having the best records. Lieut. Hersey and wife, Prof. Gowell and wife and Prof. Hart were also present and assisted in entertaining.

Arbor day was given to us for a holiday although no formal observance of the day was made at the college. The ball team went to Pittsfield, while others enjoyed themselves on the tennis courts, or watching the Orono High School team vanquish a nine from Bangor.

The Sophomore civils are making the annual survey of the campus under the instruction of Mr. Grover. Instead of simply surveying the campus proper as heretofore a survey of all the college property will be made this year and the areas computed.

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The tennis players go to Portland Tuesday, June 5, to compete in the Intercollegiate Tournament.

The ball team has been severely handicapped by the unfortunate illness of their catcher, Palmer, '96. His sickness also compelled him to miss the event of the Sophomore year—the Ivy Day exercises and banquet.

What a great convenience a telephone would be to the college, connecting in Orono with the long distance line! Now that is not so costly a luxury as formerly, it seems as though the small expense might be met in some way, and after once established it would, no doubt, prove indispensable.

While the Athletic Association did not realize enough money out of the Exhibition Drill and Ball to build the M. S. C. a new gymnasium, or to send our base ball team on a trip through Massachusetts, a pleasant evening was spent by all who were fortunate enough to attend.

Another case of dangerous illness during the past month was that of Fowler '97, of Searsport, Maine. He was confined to his room for three weeks with peritonitis and his parents were summoned. After having recovered sufficiently he returned to his home, but he has now rejoined his class.

While Rev. Mr. Cooper, president of a school of oratory of Plymouth, Eng., was visiting his Alma Mater, the Bangor Theological Seminary, a few weeks ago, he kindly accepted an invitation from Pres. Harris to deliver a lecture in the College chapel before the faculty and students. The lecture was on Hamlet and was highly appreciated by the large audience which was present.

Every morning, except Saturday and Sunday, between the hours of ten and eleven, the Stillwater river is the scene

of a swimming class under the instruction of Lieut. Hersey. The class is composed of the Freshmen, and although the lessons are coming rather late to be of much use to them in their Freshmen year, they will no doubt be of much use to them in time to come.

One of the most interesting lectures of those yet given under the auspices of the Y. M. C. A. was that of Prof. Sewall of the Bangor Theological Seminary. The subject on which he made such an interesting talk was "The First Expedition to Japan." Prof. Sewall is a very pleasing speaker, and he interspersed his lecture by relating many personal anecdotes of the trip. He was listened to very attentively by a large audience made up of students and members of the faculty.

Visitors on the campus cannot help noticing how much better the lawns are being kept this spring than usual. All the lawns between and in front of Wingate Hall, Chemical Laboratory, are in fine condition, in addition to the lawns which are always kept nicely. This will add a great deal to the appearance of the campus at commencement.

The following officers have been recently appointed in the Coburn Corps of Cadets: Cadet W. H. Jose, 1st Lieutenant, assigned to Co. "B;" Cadet F. C. Bowler, 2nd Lieutenant, assigned to Co. "A;" Cadet F. Damon, Sergeant, assigned to Signal Corps. On Tuesdays the drill consists of dress parade and inspection. On Thursdays, battalion drill close order, and Fridays, battalion drill extended order.

The large number of visitors who were on the campus Friday, May 11th, were members of Lodges of Rebekah from Monson and Guilford. They were the guests of the Lodge in Oldtown and came down to the college almost expressly to see the Cadets drill, but as

they arrived just in time to see them dismissed they went away disappointed in that particular.

The Senior vacation began June 4, and will last two weeks.

"And the Agriculturists departed sadly for the agricultural regions without their shekels." And wasn't that awfully sad?

At the last business session of the Y. M. C. A., the following officers were elected: President, Frank Damon; Vice-President, Gilbert Tolman; Recording Secretary, Percy H. Morse; Corresponding Secretary, Geo. Haley; Treasurer, G. G. Atwood. The standing committees have not been appointed yet but will be at an early date. The report of the Treasurer showed a very satisfactory state of affairs in this department.

Pullen's orchestra of Bangor, will furnish the Commencement music. The talent for the Commencement Concert on June 20, consists of the famous "Old Homstead Quartet" assisted by Felix Winternitz, the celebrated violinist, and Miss Lida Low, accompanist.

In accordance with the order issued last term that white duck pants should be made a part of the military uniform beginning May 1, the first drill in the new regalia was made on that date and quite a crowd of gentlemen and lady visitors were on hand to witness the result of the experiment. As would be expected, they make a very pleasing addition to the appearance of the Cadets being very cool and what with the white helmets that have been procured for the officers, band and signal corps, the battalion makes a neat and attractive command. The only inconvenient thing about them is the difficulty experienced in keeping them clean. Some of the students present a very amusing sight

indeed when they appear with their trousers at "half mast," which had, before washing, been long enough to turn up nearly to their knees.

Anyone coming on to the campus early Tuesday morning, May 15, would doubtless have taken it for a camp meeting ground or something of the sort, as chairs were strewed everywhere, in trees, on roofs and on the diamond, each player's position being filled with a chair and the umpire had a sofa. The boys however showed that they were not as tired as all that when they got at Bates in the afternoon.

A. H. Buck, '95, has been chosen as delegate by the Maine State Chapter of the Beta Theta Pi Fraternity, to represent their chapter at the annual convention of the Fraternity at their club house at Chautauqua, July 24 31, 1894.

A most enjoyable reception was that of Prof. Hamlin's to the Seniors at his residence on the evening of May 24. Besides the class there were also the following present: President and Mrs. Harris, Prof. Stevens and wife, Lieut. Hersey and wife, Mr. Grover, Mrs. Patten of Brewer, the Misses Chapman of Bangor, and Miss Sibley of Belfast. During the evening a pleasing entertainment was carried out, consisting of a piano solo by Mrs. Stevens, vocal solos by Miss Grace Chapman and several readings by Miss Sibley.

The new dynamo in the basement of Wingate Hall serves as a great help in illustrating experiments in electricity before the class in Physics. Prof. Stevens has had wires put in from the class room connecting with the dynamo and by means of a speaking tube to the basement signals the operator of the dynamo. By these means the workings of the smaller dynamos and motors are excellently shown and explained before the whole class.

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Both the Senior Mechanicals with Prof. Flint, and the Senior Civils with Prof. Hamlin made the trip to Waterville, Friday, May 18, in order that they might go through the car shops and inspect the new railroad bridge and incidentally take in the M. S. C., Colby ball game, which was to have been played on the 19, but which was postponed on account of rain. They enjoyed the visit very much, but were much disappointed in not being able to help cheer the nine on to victory.

The speakers for the Junior Exhibition Commencement week are the following: Chase, Damon, Ellis, Frost, Folsom, Grover, Martin, Moulton, Merrill and Pattee. A new rule adopted by the faculty is that the speakers for the Junior Exhibition shall be the ten members of the Junior class who shall attain the highest average standing in themes and declamations from the beginning of the Sophomore year to the end of the fall term of the Junior year, these appointments not to be made later than the second week of the Junior spring term.

Probably the most sensational event that has happened at the M. S. C. for many years was the almost fatal result to Mr. George Haley of Brownfield, Me., a member of the Sophomore class and who is pursuing the course in chemistry, from drinking as a beverage a concoction made of nitric acid, water and sugar. As many people well know, a very good substitute for lemonade can be made with the above ingredients if taken in proper quantities, and as Mr. Haley knew this he was accustomed in hot days during his spare moments in the laboratory to partake very freely of the "nitric lemonade," and also treat his fellow-students. Probably no harm would have resulted from it if it had been taken in small quantities and at the proper time of day, but being taken

just before meals the poison accumulated. As a result Mr. Haley was taken extremely ill and nothing but the best of medical assistance saved his life. We are glad to announce that the patient is now once more among us with health entirely restored, and although the ever present "know-it-alls" are yet making remarks about the improbabilities of his doing it again, etc., we think Mr. Haley should be the sole judge whether another experiment would be beneficial.

Miss Lucretia Colburn of Orono, has given to the College a newspaper of considerable interest. It is a copy of the *Ulster County Gazette*, published at Kingston, Ulster County, New York, by Samuel Freer & Son and bearing the date of January 4, 1800. Many of the notices are dated Dec., 1799, and a number of foreign letters bear the date of October of the same year, showing the time required for news to reach this country from Europe. The second and third pages of the paper are bordered with heavy black lines in honor of the death of George Washington who died December 14, 1799. A notice of his death and funeral services is given and also a poem on his death, by an anonymous writer.

The twenty-fifth annual convention of the Q. T. V. Fraternity was held with the Orono chapter, May 9, and 10. Delegates were present from all the active chapters and also from the Boston Alumni Chapter. Reports showed the fraternity to be in good condition financially and several chapters with building funds accumulating. Much of the time was devoted to the question of internal improvement. The officers for the following year are, W. G. V., H. E. Hill; P. W. G. V., Herbert Murray; G. K. of S., E. B. Wood; Chaplain, F. S. Adams; Warden, E. R. Flint; G. F. H., F. P. Comings; W. G. F., W. A. Morse; Ed. of Quarterly, F. L. Arnold. The Convention was followed by a banquet Thursday night in the new dining hall of the Orono Chapter. Besides the delegates and active members, many of the alumni were present. The next Grand Lodge will be held with the Granite Chapter at the New Hampshire College.

IVY DAY.

MAY 29, 1894, was the date that the Sophomore class had decided on for their observance of that time honored college custom, the planting of the ivy.

As the faculty had granted them the day off, immediately after chapel all the members of the class were busy making preparations for what proved to be a very successful affair. Upon entering the chapel one's attention was at once attracted by the decorations which were profuse and very appropriate and consisted of apparatus representing the several courses, athletics, military and a very suggestive display of H_2O .

The class secured the services of the Apollo Quartette of Bangor, which rendered the selections in their usual pleasing manner, receiving several encores. Promptly at 2.30, Marshal Fernald conducted the class to their seats with the President, the Orator and the Poet, occupying chairs on the stage.

President Randlette opened the exercises by a short speech in which he spoke of the unfortunate absence of the Presentator, Mr. Palmer, who was taken suddenly ill. His place was filled by Mr. Pride, who discharged his duties in a most witty manner and to the great satisfaction of all present. After the opening selection by the Quartette, Mr. Gilbert Tolman, the class Chaplain, made a touching and impressive prayer. After another musical selection the orator, Mr. F. A. Hobbs, delivered a well prepared oration,

taking as his subject "Earnestness the Chief Element of Success." He treated his subject in a very dignified manner. He was followed by the Quartette, when Mr. E. E. Kidder read the poem which was full of the daring deeds of this valiant class.

Following a selection and encore, Mr. E. E. Gibbs read from the chronicles the class history and he handled his subject in his usual charming manner, treating all with courtesy, but at the same time giving some most enjoyable little thrusts.

The presentations were as follows:

Popular man,	MR. WHITCOMB.	Silver Spoon
Electrician,	MR. FERNALD.	Kite and Key
Fireman,	MR. LEE.	Water Pail
Military man,	MR. MARSTON.	Sword
Class infant,	MR. MANTER.	Rattle

After the presentations came the ceremony of planting the ivy which was done on the south side of Wingate Hall, and Curator Herbert L. Niles has in his care a plant that we hope may live many years as a memorial to the class that planted it.

At 7.30 P. M., the class left for Bangor in four large buckboards, each drawn by two steeds, where they arrived in good time, and at 10.30 they seated themselves at the hospitable board of Landlord Stearns of the Bangor Exchange, and discussed for two hours an elaborate menu at the conclusion of which, Toastmaster P. D. Sargent called on the several gentlemen to respond to the following:

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MEMORIAL DAY

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TOASTS.

The Pine Tree State,	E. G. Glidden
The University of Maine,	C. P. Weston
President Harris,	F. L. Marston
'96,	J. W. Randlette
Ivy Day,	E. E. Gibbs
'97,	F. P. Pride
Field Day,	G. Haley
The Faculty,	G. Tolman
'98,	M. L. Urann
The Band,	F. E. Weymouth
Our Co-Educational Department,	C. N. Buflum
Our Future,	J. A. Starr

Mr. William O. Sawtelle of Mass. Inst. of Technology was present as the guest of the class and made a short address, comparing the life at M. S. C., with life at the larger colleges. When the banqueters arrived at the College in the early morning, they were forty tired, but well satisfied men.

MEMORIAL DAY.

OWING to the rain on this day the battalion did not participate in the exercises at Old Town as intended, but if the students did not do much, this is not true of some members of the Faculty. Prof. Rogers delivered the address at Lincoln in the afternoon and then took the train for Bangor, where he spoke in the evening in the large Norombega Hall to an audience which filled the hall to overflowing, the standing room of floor and galleries being full and also the vestibule.

The address is generally spoken of as a very masterly effort. The speaker carried the audience with him

from the very first and throughout the address his hearers were in the closest sympathy with him and with the subject.

We take from the *Bangor Whig* of May 31, the following partial account of the exercises :

AT NOROMBEGA.

"Upon the stage were seated Commander E. W. Ware, of Hannibal Hamlin Post, the presiding officer, Chaplain J. S. Sewall, Prof. A. E. Rogers, of the Maine State College, the orator of the evening, Mayor Beal and members of the City Government, prominent citizens, members of the Woman's Relief Corps and the Bangor Band. The great interest in the occasion was shown by the attendance of an audience which completely filled the large hall.

At each side of the stage was a large flag and a stack of arms. The exercises opened with a selection "Recollections of the war," finely played by the Bangor Band. Prof. J. S. Sewall invoked the Divine blessing and the band then gave a stirring rendition of "Hail Columbia."

The comrades of both posts met at their respective headquarters at 6.30. At 7 o'clock B. H. Beale Post, escorted by the Sons of Veterans, with the Bangor Cornet Band, marched through Main street, and with Hannibal Hamlin Post and their escort, the Hamlin Rifles and High School Cadets, proceeded to Norombega Hall, where seats were reserved for the Posts, their escorts and the Ladies' Relief Corps.

Mrs. Carrie Weber Clark sang "The Raft," by Pinsuti, with masterly skill and fine harmony and was heard with much pleasure.

Prof. A. E. Rogers, of the Maine State College, was then introduced

to the audience as the orator of the evening by Commander E. W. Ware, and proceeded to deliver the address which will be found in full upon the first page of this morning's issue.

The oration was an eloquent effort and was listened to by the audience with the closest appreciative attention. There was frequent applause during its delivery.

After the oration Miss May Jewell sang Randegger's "Save Me, O God," with telling effect. It was an excellent rendition. Mr. Wilbur Cochrane accompanied Mrs. Clark and Miss Jewell with pleasing results.

The singing of "America," by the audience with the band closed the impressive and interesting services. The different organizations proceeded to their headquarters and were dismissed. Thus closed another successful observance of Memorial Day."

The *Commercial* also says: "The oration of Prof. Allen E. Rogers, of the Maine State College, before the veteran soldiers at The Norombega last evening was a most scholarly and finished effort, rising at times to the height of inspiring eloquence. Prof. Rogers is one of the best authorities in Maine upon United States history, both civil and military. He writes

with a grace of expression which is not studied and speaks earnestly and clearly. It is certain that no Bangor audience ever listened to a finer Memorial Day address and the Grand Army Posts are to be sincerely congratulated upon being able to present so brilliant a speaker to our people."

We take from the *Whig* again the following account of the exercises at Orono:

"In the evening occurred the Memorial address at Town Hall by Prof. H. N. Estabrooke of the Maine State College. There was a large attendance. The comrades occupied seats in front and upon the platform were Commander P. M. Perry, E. F. Atwell, Esq., chairman of the board of selectmen; A. G. Ring, Esq., Nathan Frost, Esq., President Harris, Prof. Jordan and Prof. Flint, of the State College; Rev. P. J. Robinson, Rev. Mr. Holmes and Rev. Mr. Hill. The program was as follows: Singing, Miss Minnie Estes; reading of the Scriptures, Rev. Mr. Holmes; address, Prof. Estabrooke; singing, "America;" benediction, Rev. Mr. Robinson. Miss Susie Coburn acted as accompanist. The address was deeply interesting."

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ALUMNI NOTES

A universal feeling of regret was felt on the campus when the announcement was made of the resignation of our friend and instructor, Mr. Briggs, who leaves us to assume the duties of a partner in a large mercantile agency established in Bangor. Aside from the feeling of sadness at the loss of one whom we all felt to have a deep interest in, and a strong friendship for us, at all times, is the feeling of loss to our teaching force by his departure. Since the first term of his junior year when he became student assistant in Natural History, his work in the class-room, in the museum and in the herbarium has always been most careful and painstaking, and the results have been valuable alike to the College and to science. The work of Mr. Briggs in the reclassification of the Blake Herbarium, and in the collection of specimens in conjunction with Prof. Harvey for a Flora of Maine, as well as much original work, has been of a very arduous nature, and his ability as a botanist is undoubted. Mr. and Mrs. Briggs will make their home in the future in Bangor, and we heartily wish them success.

George F. Black, who has been an assistant engineer for the Maine Central in Chief Engineer Allen's office in Portland, for the last six or seven years, has been promoted to a superintendency on the White Mountain division of the railroad, and will make his residence in

Lancaster, N. H., after the first of May. Mr. Black is a graduate of the Maine State College, in the class of '86, where he took the course in civil engineering which was the foundation of his success on the Maine Central. Chief Engineer Allen is also a graduate of the State College, and is a son of Dr. Allen, its first president. Mr. Charles T. Vose, who is an assistant engineer, under Mr. Allen, is also a graduate of the College. It is gratifying that Maine's great railroad should thus be under the efficient care of civil engineers who are the sons of Maine's school of technology.

—Bangor Commercial.

A meeting of the Alumni Association of Boston and vicinity was held May 19, at the United States Hotel, Boston. After a time spent in an informal manner the banquet was announced and the following menu was discussed :

Little Neck Clams on Half Shell	Consomme Printaniere
Green Turtle	Spanish Olives
Broiled Bluefish—Lemon Batter	
Sliced Tomatoes	French Fried Potatoes
Vermont Turkey—Cranberry Sauce	
Spring Lamb with Green Peas	
Brown Mashed Potatoes	Small String Beans
Fillet of Beef, Larded—Mushroom Sauce	
Apricot Fritters—Brandy Sauce	
Peach Sherbet	
Lobster Mayonnaise	Dressed Lettuce
Charlotte Russe	Ice Cream
Water Wafers	Fruit
	Edam Cheese
	Coffee

The principal speaker of the evening was President Harris, who in the course of his remarks stated the present condition of the College and outlined some of

the plans for the future. The remainder of the speakers were unanimous in their expressions of loyalty and interest in the College, and they evinced great satisfaction, among other things, at the increased interest in athletics. Some of those present were: A. C. Grover, '92; W. N. Patten, '91; C. J. Wallace, '90; E. W. Danforth, '92; E. L. Folsom, '84; L. H. Jones, '94; R. K. Smith, '90; H. B. Andrews, '88; E. O. Goodridge, '85; O. J. Dutton, '85; F. O. Andrews, '90, and Louis C. Southard, '75.



At the rooms of the Natural History Society last evening, a very interesting address on onyx marbles was delivered by Professor George P. Merrill of the Smithsonian Institute at Washington. Professor Merrill is a native of Maine, Auburn being his native place. He graduated from Maine State College, class of '79, and became attached to the Smithsonian Institution. He has special charge of the department of building stones and is the author of a work on building stones. He also writes for the *Popular Science Monthly*, on this subject and meteorites.

—*Portland Daily Press.*

Prof. E. H. Farrington, M. S., class of 1881, Chemist of the Agricultural Experiment Station of the University of Illinois, has just issued as a bulletin of that station, an article of six pages, entitled, "An acid test of cream."

J. A. Tyler, '92, is doing engineering work at Portland, Me.

E. W. Danforth, '92, is at present working for the city of Somerville, Mass.

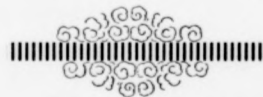
George Maguire, '92, has a position with the city of Malden, Mass.

S. M. Timberlake, '92, spent Sunday, May 20, on the campus, leaving for Pittsfield Monday morning.

H. M. Lewis, '93, has a fine position as Instructor in Physics and Mathematics at Brunswick Academy.

A. W. Drew, '90, has just accepted a fine position as draftsman in the Hull Department of The Newport News Ship Building & Dry Dock Co. His work will be principally on the three new Government gunboats, which they have just commenced work on.

H. A. McNally, '87, is at present Assistant Director of the *Weather Bureau*, situated at Columbia, Missouri.



VISIT OF INSPECTOR GENERAL.

COL. R. P. HUGHES, Inspector-General U. S. Army, stationed at Governor's Island, New York Harbor, inspected the Coburn Corps of Cadets Monday, the 28th day of May. From 8 to 10 A. M. he had the Seniors working on a problem in tactics. A topographical sketch of country twenty miles by fifteen, drawn by Cadet Sgt. Chase at a scale of a mile to three inches, was offered for their study. The country was broken and mountainous, traversed diagonally by a river with all bridges broken. Two divisions, the advance guards of opposing armies twenty miles apart, were shown on opposite sides of the map. The Seniors were required to write out the orders of the division commander under different suppositions, one set of orders for crossing the river, another set to oppose the

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crossing and the like. These papers were discussed in the class-room two days later, then forwarded to the Inspector-General who sends them to the War Department at Washington as an exhibit of what our boys can do when called upon to think and act. The orders written out by Cadet Major Wood attracted the especial notice of the Inspector-General by their clear and concise style.

From 10 o'clock to 12 the battalion was exercised as follows: Battalion inspection followed by review and parade.

Then the Colonel had a problem in minor tactics worked out on the field. A river was conceived to be flowing between the target pit and bullet stop. It was crossed by a bridge, one end occupying the space between the tar-

gets. This was a defile defended by Capt. Murray with one platoon, and attacked by Capt. Kimball with three platoons. Lieut. Bowler, chief of Capt. Murray's platoon, offered the attacking party a surprise in the nature of a hastily constructed abatis at the entrance of the supposed bridge. The attack and defense was carried out with a dash and enthusiasm, interesting and inspiring to observe—an object lesson of the value of our State College Cadets to the country in her possible hour of need.

Colonel Hughes expressed himself as highly pleased with the battalion, which in appearance and efficiency stands among the very first in his inspection. We shall look forward with interest to the publication of his official report.

Mark L. Hersey.



The Sophomore Prize Declamations occurred Friday evening, June 2, at the Orono Town Hall, and there was a large attendance. The speakers acquitted themselves very creditably in each instance and showed both ability in public speaking and good training. Pullen's orchestra of Bangor furnished excellent music for the occasion and the selections were heard with much pleasure. The exercises throughout were of much interest. The awarding committee is composed of Mr. S. H. Powell, Rev. N. S. Hill and Rev. P. J. Robinson. The program was as follows:

MUSIC.
Puritanism in America, *Shelby*
EDWARD EVERETT GIBBS, Bridgton.
Aaron Burr, *Blair*
PAUL DUDLEY SARGENT, Machias.
The Roman Soldier at the Destruction
of Herculaneum, *Atherstone*
CHARLES PARTRIDGE WESTON, Madison.

MUSIC.
Joan of Arc, *DeQuincy*
JOSEPH WILLIAM RANDLETTE, Richmond.
Robespierre's Last Speech,
GEORGE WESLEY JEFFERY, No. Monmouth.
Toussaint L'Ouverture, *Phillips*
PERLEY WALKER, Embden.

MUSIC.
Daniel O'Connell, *Phillips*
MARK LIBBY URANN, Sullivan.
Address to Returned Soldiers, *Manning*
STANLEY JOHN STEWART, Foxcroft.

MUSIC.
Speech at Boston Banquet, *Grady*
PERLEY BURNHAM PALMER, Bridgton.
Reply to Corry, *Gratten*
EVERETT GRAY GLIDDEN, Augusta.

MUSIC.
This year there has been a change in the annual Commencement program of the College, the Sophomore Prize Declamations preceding the regular Commencement by two weeks.



THE ADVANTAGES OF PHYSICAL CULTURE IN COLLEGES.



IT is a matter of great satisfaction to all those persons who are interested—directly or indirectly—in physical education, that this important work has in the last two or three years taken the greatest step forward in its history. In some cases, it is true, it has not been undertaken in a way calculated to secure the best results, but, nevertheless it has been a step in the right direction.

The scheme of introducing Physical Culture in the Grammar schools and continuing it through the High school is, I think, excellent. It fits the body for the college work when, in most cases, Physical Culture is compulsory.

I say the scheme of introducing is excellent. As a general thing, that is about all there is of it. It is started and then allowed to slowly die out. Of course there are exceptions as in everything else, but in the majority of cases the above is true.

Among the causes for these failures may be mentioned, first, the incompetency of the teachers; second, the amount of time allotted to this important branch of education; third, the lack of interest on the part of the pupils; (this may be, and unusually is, a direct result of the first), fourth, the trouble and inconvenience of being properly dressed for such work; fifth, the exercises themselves, and sixth, the apparatus. As to the first reason for the discouragement and in many cases, absolute failure of this scheme in so many places; it is a reason that is self-evident. Take the Grammar schools

for example, the pupils are very young. Their carriage and bodily development may be more easily righted or in some cases, wronged, here than anywhere else, except the gymnasium. Under an instructor who thoroughly understands his business and has the tact and energy to impart to his pupils, it would be a great success; but under one who does not know the first principles of the science of Physical Culture, the reverse in result would be true.

Again, the teachers themselves would find it of great benefit, if instead of standing around and watching their pupils do the exercises, they would go through it themselves, putting dash and snap into the movements. It would have a great effect on the pupils and their work.

As to the second cause, it is an indirect result of the first. If teachers understood the importance of Physical Culture better, they would be far more willing to give a part of their time for it. It would more than repay them in the end.

Third, lack of interest on the part of the pupils. As has been said before, this may be a result of the first. A teacher who has no energy to impart to the pupils during the period devoted to Physical Exercise need not be surprised at their slowness and general laziness, for it is utterly impossible to expect persons to snap through a set of exercises in good shape when there is no snap in the instructor. This has been proved time and again.

Fourth, the trouble and inconvenience of being properly dressed. Of course the pupils can go through their exercises

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Fifth, the exercises themselves; these exercises must be such as are adapted for use in the class room, and must also be such as may be executed with safety by comparatively weak children and still give the stronger ones work enough. The "setting-up" exercises as prescribed in the U. S. Army Drill Regulations, are excellent, and are suitable for all persons as regards strength. They do not require apparatus, do not need much room, and, if used regularly and persistently, are very beneficial.

There is one point that should be especially emphasized, and that is the subject of ventilation in our school rooms during the time for exercising. Of course the room should be properly ventilated at all times but especially so when 35 or 40 persons are exercising and breathing hard. No draughts of air should be allowed to strike the pupils when exercising. Pneumonia or consumption may be the result.

One very important point is often disregarded entirely, and that is the proper height of desks and seats. If the seat is too high, the feet are not on the floor and afford no support whatever to the body, which is cramped up, and injured. This is one cause of special curvature, a common defect.

If the plea for physical culture in our schools and colleges was more universally recognized throughout our country, our graduates would be far better fitted for their life work, whatever it might be.

F. L. M. '96.

OUR FIELD DAY.

All things considered, our first meet was a decided success. The following records were established:

100 yd. dash, P. B. Palmer, '96, 10 7-10 sec.
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440 " " H. Murray, '94, 1 min. 3 sec.
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1 " " J. A. Starr, '96, 5 " 48 $\frac{1}{2}$ "
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Running broad jump, H. H. Heywood, '96, 17 ft. 3 in.
Standing high jump, L. R. Folsom, '95, 4 ft. 3 in.

Standing broad jump, G. Haley, '96, 9 ft. 4 in.

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Putting 16 lb. shot, H. H. Heywood, '96, 31 ft. 10 in.

Throwing 16 lb. hammer, H. H. Heywood, '96, 73 ft. 8 in.

These results are nowhere near what they will be in a year, but we are satisfied when we compare them with the *first* records made by other Maine colleges. We worked under many disadvantages, such as, no trainer or coach, no athletic field, no gymnasium, lack of time for training, and lack of general interest. In fact it would take but very little space to enumerate our *advantages*. No doubt the reduction in afternoon work will help us out a great deal next



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year, not only in track athletics but in foot ball, base ball and tennis.

Our old enemy, Lack of Interest, was with us as is shown by the fact, that out of the twenty-seven men entered, only fourteen entered voluntarily. The remaining thirteen received decided "assistance" from the receiver of entries. The fact that the records grew poorer as the end of the program was neared, is explained in this way. A few men did all the work and all the record making, and as they became tired the records grew poorer. Take for example the three running jumps which were all won by one man. He had already competed several times and was in no condition to establish further records. He won these events because no one had made a decided specialty of them, and the result was three poor records, which the same man can easily break when he is fresh. This shows that our men must select their favorite events and perfect themselves in them, and until this is done one man will be able to hold five or six records, some of which are sure to be way below par. It is safe to say, that if present holders of records in field events could have a chance to try for new records, nearly all would be broken and "well broken" too, and doubtless the same is true of some of the track events. In the trial heats of the 100 yd. dash, better time was made than in the finals. The winner of the first heat made a record of 10 4-5 seconds, and the winner of the second heat made it in 10 3-5 seconds. The final heat, won by the winner of the first heat, was made in 10 7-10 seconds. If two or three good men had confined themselves to this one sprint and to three or four field events, the record would have been 10 3-5 seconds at the worst. This shows again, that in order to get a good set of records, we must confine ourselves to a few well-chosen

events. When men get to doing this, the points will be more scattered and a man will not have to win more than twenty points at the most, to get the "all-round" championship. Training will be much easier and more satisfactory, now that we have a *basis* from which to work. When a man has no records to beat he cannot tell how much will be required of him in various contests and he cannot train properly.

We do not want these records to remain unchanged any longer than is necessary, so why cannot we hold our next meeting in September? This is an ideal month for such an event, and men are usually in better condition in the Fall than in the Spring, especially when the season is very late, as is the case here at M. S. C. Anyone who will give the matter a moment's consideration will agree at once that this is the very best thing we can do for athletics here, and incidentally for the college. We can break the majority of our records all to pieces and as regards the financial question we can come out ahead every time. We almost paid our expenses this time, and in future with proper advertising, we can make at least fifty dollars. This first meet was not sufficiently advertised, which is the sole reason for our being a little behind in money matters. Let us go ahead and hold this meet in September, if only to obtain money for foot ball, though of course, that will be a minor consideration. Why not have a committee appointed at once and consider the meet in September a fixed event? We want a chance to better our records and the sooner we have it the better for M. S. C. We were very ably assisted in our first meet by the following members of the Faculty who acted as officials: Prof. N. Hart, Prof. J. S. Stevens, Prof. W. W. Munson, Mr. D. W. Colby, Mr. N. C. Grover, Mr. D.

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Palmer, c
Farrell, 3
Gilbert, c
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BASE BALL.

67

W. Trine and Lieut. Hersey. Thanks are also due Mr. Keith of Old Town and to Mr. Sager of Bangor, who acted respectively as starter and referee, and to Mr. C. I. Haynes and Mr. S. H. T. Hayes, who acted as judges. We were glad to see so many members of the Faculty present as spectators and we appreciated their interest. Speaking for the committee, I would say that we have done our best, and we hope that any mistakes that may have been made, will be excused on the plea that we were the "pioneers."

H. H. H. '96.

BASE BALL.

On Saturday, May 5, M. S. C. played her first league game, meeting Colby on the latter's diamond. During the first seven innings the game was very exciting and the score was close. In the eighth Colby batted heavily and scored eleven runs. This was due in part, no doubt, to the encouraging cheers which arose from the bleachers at intervals of a few seconds. M. S. C. played a good game excepting one or two individual and costly errors. The score:

COLBY, 17; M. S. C., 6.

COLBY.									
AB.	R.	BH.	TB.	PO.	A.	E.			
Purrington, C., 3d b.....	5	1	0	0	2	0	2		
Hoxie, 2d b.....	4	4	1	1	1	3	2		
Coffin, c.....	4	2	1	1	5	0	2		
Whitman, l. f.....	6	2	2	2	2	0	1		
Totman, c. f.....	6	1	2	4	3	1	1		
Patterson, p.....	6	2	2	3	0	8	1		
Osborne, 1st b.....	5	1	2	2	10	0	0		
Osgood, r. f.....	5	1	1	1	0	0	0		
Purrington, B., s. s.....	4	3	1	1	1	2	3		
Totals.....	45	17	12	15	24	14	12		

M. S. C.									
AB.	R.	BH.	TB.	PO.	A.	E.			
Bass, p.....	5	0	2	2	0	8	0		
Frost, l. f.....	5	2	2	2	2	0	1		
Haynes, 2d b.....	5	2	2	2	0	2	2		
Palmer, c.....	5	0	1	1	4	1	0		
Farrell, 3d b.....	5	0	0	0	3	1	4		
Gilbert, c. f.....	5	0	2	3	2	0	0		
Cowan, s. s.....	5	0	0	0	4	2	1		
de Haseth, 1st b.....	5	0	0	0	9	0	0		
Durham, r. f.....	5	2	1	1	3	0	0		
Totals.....	45	6	10	11	27	14	8		

Innings.....1 2 3 4 5 6 7 8
M. S. C.....1 0 2 0 2 0 0 1-6
Colby.....0 0 2 1 0 0 3 11-17
Earned runs—M. S. C., 2; Colby, 3. Two base hits—Gilbert, Patterson. Three base hits—Totman. Bases stolen—M. S. C., 4; Colby, 10. Base on balls—by Patterson, 4. Struck out—by Bass, 5; by Patterson, 5. Passed balls—by Palmer, 3. Wild pitch—Bass. Time of game—2 hrs., 30 min. Umpire—Donovan.

M. S. C., 23; BATES, 18.

ON May 15, the first league game played on our diamond took place. It was a very raw, chilly day which materially lessened the number of spectators, although there was a fair sized crowd. The chilly wind had its effect upon the players and both sides played very loose ball.

The game was characterized by the heavy hitting of both teams, M. S. C. leading in this respect. Slattery, for the visitors pitched a ragged game, in the first inning sending four men in succession to first on balls. In the seventh he was replaced by Pulsifer. In the first Burrill wrenched his knee in sliding to second. For our team Haynes pitched the first seven innings and handled the ball in good shape. Bass pitched the other two and in the eighth very handily struck out the first three men. In the third there was a neat double by Bass, Cowan and de Haseth. Some very difficult stops on first were made by de Haseth. The score:

M. S. C.									
AB.	R.	BH.	TB.	PO.	A.	E.			
Bass, s. & p.....	6	2	3	6	3	3	0		
Frost, l. f.....	6	2	1	1	0	0	0		
Haynes, p. & 2d b.....	4	3	4	5	3	12	0		
Palmer, c.....	6	4	2	2	9	3	3		
Farrell, 3d b.....	6	2	3	3	0	2	2		
Gilbert, c. f.....	5	2	1	3	0	0	0		
Cowan, 2d & s.....	4	3	2	2	3	1	1		
de Haseth, 1st b.....	3	3	0	0	9	0	2		
Durham, r. f.....	6	2	1	1	0	0	0		
Totals.....	46	23	17	23	27	21	8		

BATES.									
	AB.	R.	BH.	TB.	PO.	A.	E.		
Douglass, 2d b.....	6	2	4	5	1	1	0		
Burrill, 1st b.....	4	3	2	2	8	0	1		
Pulsifer, 3d b. & p.....	6	2	3	7	2	1	2		
Campbell, l. f.....	6	2	1	3	0	0	2		
Gerrish, c.....	6	1	1	1	7	1	1		
Brackett, s. s.....	1	5	0	0	5	0	5		
Field, c. f.....	4	2	1	1	0	0	1		
Slattery, p. & 3d b.....	5	1	1	2	1	7	0		
Cutts, r. f.....	4	0	0	0	0	0	0		
Totals.....	42	18	13	21	24	10	12		

Innings..	1	2	3	4	5	6	7	8	9
M. S. C.....	7	1	2	0	5	5	0	3	x-23
Bates ..	1	1	1	1	5	2	1	0	6-18

Earned runs—M. S. C., 1; Bates, 1. Two base hits—M. S. C., 1; Bates, 5. Three base hits—M. S. C., 1; Bates, 1. Stolen bases—M. S. C., 9; Bates, 7. Struck out—by Haynes, 4; by Bass, 4; by Slattery, 6. Passed balls—by Palmer, 6. Wild pitches—by Haynes, 1; by Slattery, 6. Time of game—2 hrs., 30 min. Umpire—W. E. Keith of Old Town.

BATES, 3; M. S. C., 1.

M. S. C. played Bates at Lewiston, May 18, under very unfavorable circumstances owing to the rain. The game opened with Bates at bat and in the field M. S. C. did good work. In the second inning it commenced to rain and the game was stopped for a time. Play was resumed and continued in a heavy rain. In the third M. S. C. scored one. In the fifth Bates scored two on two safe hits and an error. They also scored one in the sixth. At this point the game was called on account of the drenching rain. Both teams played fine ball under the circumstances. The score:

BATES.									
	AB.	R.	BH.	TB.	PO.	A.	E.		
Wakefield, 1st b.....	3	1	1	1	6	1	0		
Douglass, 2d b.....	3	0	0	0	2	1	1		
Pulsifer, 3d b.....	2	0	0	0	1	2	0		
Field, c. f.....	3	0	0	0	0	0	0		
Gerrish, c.....	2	1	1	1	3	3	0		
Files, l. f.....	2	0	0	0	1	0	0		
Brackett, s. s.....	2	1	1	1	3	0	4		
Slattery, r. f.....	3	0	0	0	2	0	0		
Berryman, p.....	2	0	1	1	0	5	0		
Totals.....	22	3	4	4	18	12	5		

M. S. C.									
	AB.	R.	BH.	TB.	PO.	A.	E.		
Bass, s. s.....	4	1	0	0	2	0	0		
Frost, l. f.....	3	0	0	0	1	0	3		
Haynes, p.....	3	0	1	1	0	3	0		
Palmer, c.....	2	0	1	1	6	2	0		
Farrell, 3d b.....	3	0	0	0	0	3	0		
Gilbert, c. f.....	3	0	0	0	1	0	0		
Cowan, 2d b.....	1	0	0	0	3	1	0		
de Haseth, 1st b.....	2	0	0	0	5	1	0		
Durham, r. f.....	3	0	1	1	0	0	1		
Totals.....	24	1	3	3	18	10	4		

Innings.....									
	1	2	3	4	5	6			
Bates.....	0	0	0	0	2	1-3			
M. S. C.....	0	0	1	0	0	0-1			

Stolen bases—Douglass, Brackett. Bases on called balls—by Haynes, 3; by Berryman, 4. Hit by pitched ball—Brackett. Struck out—by Haynes, 3; by Berryman, 4. Passed balls—Gerrish, 3; Palmer, 1. Wild pitches—Haynes, Berryman. Umpire—Kelley of Lewiston.

M. S. C., 10; COLBY, 7.

Four hundred people were present at Colby's defeat by M. S. C. on the home diamond June 2. The play on both sides was very good except in the seventh when Colby went to pieces and let in six runs for M. S. C. Bass, in the box, put up the best game we have seen this year, striking out eleven men and making three assists. Farrell played a big game at third. In consequence of Palmer's recent sickness, de Haseth played behind the bat and distinguished himself by his customary steady work. The score:

M. S. C.									
	AB.	R.	BH.	TB.	PO.	A.	E.		
Bass, p.....	5	2	1	1	0	3	0		
Haynes, 2d b.....	4	0	1	1	2	1	0		
Frost, 1st b.....	5	1	1	1	6	0	0		
Farrell, 3d b.....	5	1	0	0	3	2	0		
Cowan, s. s.....	3	1	1	1	2	1	0		
de Haseth, c.....	3	2	1	1	12	0	1		
Gilbert, c. f.....	4	2	2	2	0	0	0		
Merrill, r. f.....	4	0	0	0	0	0	0		
Durham, l. f.....	3	1	1	1	2	1	1		
Totals.....	36	10	8	8	27	8	2		

COLBY.									
	AB.	R.	BH.	TB.	PO.	A.	E.		
Purrrington, 3d b.....	5	1	1	1	1	2	1		
Hoxie, 2d b.....	3	1	1	2	5	3	0		
Whitman, l. f.....	5	1	1	1	1	1	1		
Totman, c. f.....	5	1	3	4	2	0	0		
Patterson, p.....	5	2	2	2	2	0	2		
Latlip, s. s.....	5	1	3	3	2	4	4		
Osborn, 1st b.....	4	0	1	1	7	0	3		
Osgood, r. f.....	4	0	1	1	1	0	0		
Sturtevant, c.....	4	0	1	1	3	3	1		
Totals.....	40	7	14	16	24	13	12		

Innings..	1	2	3	4	5	6	7	8	9
M. S. C.....	0	0	0	2	0	1	6	1	x-10
Colby ..	2	0	0	2	0	0	0	3	0-7

Earned runs—Colby, 3. Stolen bases—Haynes, Cowan, de Haseth, 2; Gilbert, 2; Hoxie, Patterson, Osborn, 2. Base on balls—by Bass, 1; by Patterson, 4. Hit by pitched ball—Hoxie. Pass ball—by de Haseth, 2; by Sturtevant, 2. Wild pitch—Bass. Struck out—by Bass, 11; by Patterson, 4. Double plays—Durham and Haynes; Whitman and Osborn. Umpire—Miller. Time—2 hrs.

ALUMNI NOTES.

ATHLETIC NOTES.

Portland beat Colby 7-4 in five innings at Waterville, May 14.

Colby beat Bates 32-22, May 16, at Waterville.

Bowdoin beat Bates 26-8, at Brunswick, May 22.

Colby beat Bowdoin 11-10 at Waterville May 26.

Burrill of Bates, will probably not play again this year.

Corrigan the shortstop of the Brockton's is a Tuft's student.

First baseman Goeckle of the U. of P. team, will join the Philadelphia League team June 4.

Harvard has developed a new pitcher in the person of young Charley Payne who did such good work in the box against Trinity and Tufts.

President Elliot of Harvard, says that every student should spend two hours each day in healthful exercise.

Yale won the Yale-Harvard track athletic meet by a score of 57-55 points. Five association records were broken.

Wheeling is fast growing in popularity. Over forty authorized race meets were held in this country on May 30.

The management of the Yale and Harvard navies, have decided that the annual 'Varsity race will take place on Friday afternoon, June 29, at 5.30 o'clock.

Wellsley girls are very fond of rowing. There are five rival crews at the college this year. A Harvard student has been engaged as coach by one of the crews.

LAWN TENNIS.

M. S. C. VERSUS BANGOR THEOLOGICAL SEMINARY.

IN acceptance of an invitation from the students at the Bangor Theological Seminary to compete in a tennis tournament in singles and doubles between teams from M. S. C. and the Seminary, Heywood, '96, Gibbs, '96, Smith, '96, and Randlette, '96, met them on their courts on Thursday afternoon, May 31. Barker and Dunnack in singles, and Barker and Dunnack, McCann and Prof. Gilmore in doubles, represented the Seminary.

The first match was between Randlette and Smith and Barker and Dunnack, the latter winning by a score of 6-1, 6-0. Heywood and Gibbs then succeeded in beating out McCann and Gilmore in a two set match, 9-7, 6-2.

In the singles the first match was between Heywood and Barker. The former played too swift a game for his opponent and won quite easily, 6-4, 6-1. Gibbs found no difficulty in winning from Dunnack by the same score, 6-4, 6-1. The finals in doubles between Heywood and Gibbs and Barker and Dunnack was, however, the most interesting match of the day. The Seminary students started out like sure winners, taking the first set, 6-4, and obtaining a lead of 4-1 in the next set, when the collegians took a spurt and by some good drives and smashes got the set, 6-4. The next set went to M. S. C. by a score of 6-1.

This is the third tournament in which representatives from these institutions have competed, and although M. S. C. has always been victorious the "Theologs" have always royally entertained the visitors and the matches have never failed to be interesting.



COLLEGE WORLD

There are seven daily papers in American colleges.

The Dartmouth students have pledged \$1,000 in support of their base ball team.

The State of Missouri has appropriated \$1,525,000 to her State University since 1891.—*Ex.*

The annual intercollegiate shooting match between the clubs at Harvard, Yale, and Princeton will be held this month.

Noah was the first pitcher. He pitched the ark within and without. The game was called on account of rain.—*Ex.*

The gifts of Henry W. Sage to Cornell have alone amounted to considerably over a million dollars.

The Brown Freshman Base-ball team handily defeated the Yale '97 team on April 26, by a score of 11 to 5.—*Ex.*

Dr. Corydon L. Ford, Professor of Anatomy, and the oldest member of the faculties at Michigan, died on April 14.

Two hundred and forty-nine post-graduate courses are offered at Yale. This is an increase of thirty-eight over last year.

Two hundred and nineteen courses are offered in the liberal arts and sciences at Harvard. President Eliot has calculated that it would take forty-four years to complete the whole number.—*Ex.*

Dr. Sargent, of the Harvard gymnasium, has devised a new game called "battle ball," which combines some of the features of bowling, base ball, cricket, tennis, and foot ball.

In response to request, the U. S. Government has detailed an officer to give instruction in the theory and history of military tactics and science in Harvard University.

President Low of Columbia College, will send Professor Jackson, of the English department of Columbia, as a delegate to the 200th anniversary of the University of Halle, Germany.—*Ex.*

The University of Utah has abandoned its military department. Lack of means to carry it on is the cause for closing it. Oh! that means were lacking at the Maine State College.

The Harvard foot-ball management have decided to offer prizes for accuracy in punting, drop-kicking and place-kicking, as well as for the best all-around work.—*Ex.*

Rutgers Female College, on West Fifty-fifth street, New York, which was organized in 1838, is in immediate need of money, which must be had at once or the institution must close its doors.

The Cleveland Central High School is the largest school in the United States, having an enrollment of 1,685 students. The public schools send over eighty per cent. of their graduates to high schools of the city.—*Ex.*

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ADVERTISEMENTS.

tions and relies of the institution. The Butterfield building will be the first one erected, and will cost about \$50,000. If a sufficient number of the students desire to pay \$100 to \$200 a year for rooms, a dormitory will be built with all the modern improvements. Ground will be broken for Butterfield Hall soon after commencement, and the remaining buildings will be pushed as rapidly as possible.—*Boston Evening Record.*

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THE EQUIPMENT consists of eighteen buildings; ten laboratories used for Physics, Biology, Bacteriology, Mineralogy, Photography, Agricultural Chemistry, Instruction in Chemistry, Investigation in Chemistry, Horticulture, and Civil Engineering; the Conservatories; the Forcing House; the Dairy; the Farm; the Drawing Rooms; the Shops used for Wood-working, Iron-working, and Filing; the Foundry; the Museum; the Herbarium; the Library.

MILITARY AND ATHLETIC DRILL under the supervision of an officer of the U. S. Army are required of all male students, unless physically unfit. The cadets spend one week of each year in camp.

THE COURSES OF STUDY leading to degrees are five, each requiring four years.

The Science Course is designed for those who seek the college for general culture and training. It differs from the usual college course in omitting Latin and Greek and substituting French, German, English and scientific studies.

The Agriculture Course is designed for those who wish to become farmers, teachers or investigators in agricultural science, or editors of agricultural papers.

The Civil Engineering Course is designed for those who wish to become surveyors, railroad, highway, hydraulic, bridge or sanitary engineers.

The Mechanical Engineering Course is designed for those who wish to become electricians, managers of manufacturing plants, or general mechanical engineers.

The Chemistry Course is intended for those who wish to become chemists or to prepare themselves for courses in pharmacy or medicine.

THE SHORTER COURSES leading to a certificate are as follows:

The Agriculture Courses of one and two years are designed for those who wish to become farmers.

Training courses of twelve weeks each are conducted during the winter in General Agriculture, Dairying, Poultry Management, Carpentry and Iron Work.

A Summer School, especially intended for teachers, will be established in 1894.

The Extension Courses consist of courses of home reading, and courses of lectures by members of the Faculty.

THE COLLEGE YEAR is divided into two sessions beginning on the first Wednesday in February and September.

For catalogues and further information, address

A. W. HARRIS, President.

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The will of a late Californian provides for a legacy of \$400,000, to be devoted to the establishment of a School of Industrial Arts at the University of California.

It has been voted by the faculty of the medical school at Tufts College to lengthen the term to eight months, exercises beginning the first Wednesday in October and continuing until the first Wednesday in June.

During the past year, Yale University has received by gift \$291,595.43, together with the sum which will have been given for Vanderbilt Hall when completed; and by bequest \$154,000, and also the residue of the estate of the late Martin S. Eichelberger, '58.—*Ex.*

The new catalogue of Wittenberg contains a new regulation which requires each student to pay one dollar vandal damage to property. The money will be refunded if the perpetrators are found.—*Ex.*

A monthly magazine will be published soon by the American Republican College League. The board of editors will be chosen from the leading colleges of the United States, and the magazine will be published in New York.—*Ex.*

Ex-United States Senator Henry L. Dawes's fourth lecture before the Dartmouth College students was given Saturday night. Mr. Dawes took for his subject "The Battle Before the War."

Dr. Horace Jayne dean of the College department of the University of Pennsylvania, has resigned, that he may be able to give more attention to scientific study and investigation. He has been dean of the university for five years and has held a professorship ten years. He is going to Europe.

Professor Williams of Johns Hopkins University, says that the practice of hazing at college is an ancient one. At Heidelberg University, where he studied, he came across an old rule printed in 1430, forbidding the practice, by the older students, of shaving the heads of the new students and filling their ears with wax.—*Ex.*

The Prospect Union is the name of a Harvard evening college recently established at Cambridge. Over fifty men of the Harvard faculty have volunteered their services as instructors. Its object is the improvement of workmen, who will be charged a fee of twenty-five cents per month for the privileges of the union.—*Palo Alto.*

President Eliot, of Harvard, who has become so conspicuous before the college world of late, especially on account of his attitude toward athletics, is credited with the following utterance: "The Greeks, who knew more about athletics than we shall learn in a hundred years, held their Olympic games once in four years, while to-day the college students want at least four contests every year."—*Ex.*

The corner stone of the Pythian University, the only institution of the kind in the world, was laid at Gallatin, Tenn., on Wednesday, May 2d, with imposing ceremonies conducted by the Grand Lodge of Tennessee. The building will be a four-story structure, with a tall dome or observatory. The architect estimates the cost at \$250,000. It is being built by the Knights of Pythias of the world. The location of the building is one mile north of the town on a hill which gives a fine view of the surrounding country.

Italian professors, says the Pall Mall Gazette, (London), are wailing over the suppression of six universities, which, in these hard times, the Government can no longer afford to support. The doomed colleges are those at Messina, Calania, Modena, Parma, Sienna and Sassari, in all of which the number of students ranged from one hundred to four hundred. A high school at Maserata, with 150 students, is also to be closed.

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