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IN the pure modesty of simple duty,
More may be read than from the rattling tongue
Of saucy and audacious eloquence.
Love, therefore, and tongue-tied simplicity,
In least speak most.
—Shakespeare.

ONLY a few short months ago we took up our pen to make our first editorial effort. The result was No. 1, Vol. IV. of the WPI. By efforts continued from that time to this we have been able to offer you the consecutive numbers of the paper, until now we have come to No. 6, which is to be the last of the volume.

We feel that the experience gained by our connection with the WPI has been a valuable one, and we trust that some of the benefits of this experience may return to the paper itself, as most of the present Board will remain to work on volume V. Although the work, which has been required of us as editors, has taken quite a little of our time, and has demanded some sacrifice, it has on the whole been pleasant and agreeable, and we would urge any of our fellow-students, who may be called upon to serve on the editorial staff, to do so for the sake of both the profit and the pleasure.

BEFORE the publication of our next number several events will have transpired which may be of sufficient importance to speak of in advance. First in course will be the Athletic meeting at the Rink which is too close upon us to discuss in this article, still we trust the Tech will not be behind-hand in the contest. The great event for most of us will be the April vacation and with it the coming of spring. Those who have had the misfortune to go to and from the Tech by way of West Street and have been sadly watching the approach of the mud season, may thank the good graces of the school calendar that it allows them to be out of town during a good part of the time when the walking is knee deep.

This April vacation will be one of special moment to the Preps, many of
whom, now away from home for the first time, will then return to the paternal roof, sleepy from continued early rising, with ugly scars and bruises on their hands, but full of enthusiasm and experience. May joy be with you, innocent youths, and may you live to enjoy many happy returns to the family circle.

To the Middlers and Juniors a greater part of the spring vacation means not rest but only harder work. Still a change is always agreeable and hardly a man could be found that does not consider a week of practice a pleasant relaxation from the regular routine which has become so tiresome.

To the Junior Civils perhaps the April practice may afford the greatest novelty. They will then be entrusted with those valuable transits and chains that have been through so many battles, and with a new field-book and a few H pencils they will set out on the cold damp earth to gather notes which will afterwards prove such a labyrinth for platting.

The new catalogue will soon be published with all its old stories, made none the more emphatic to the initiated by another repetition. The Prep will be awe-inspired upon reading the subjects of the Theses presented by '88, and will turn pale when he reads that at least five evenings each week must be devoted to study. The upper classmen will be surprised to learn that valuable accessions have been made to the library during the past year, and the Middlers in particular will wonder what it means where it says "the entire expense for tuition, board and utensils need not exceed four hundred and fifty dollars per year." But the catalogue is a great blessing however, in spite of the complaints that are always made against it, for it tells the Alumni what their class-mates are doing and shows to outsiders that the Tech is on the rise in other respects than athletics alone.

Another important thing to come up during the next month will be the development of men who are to represent us at the spring athletic meetings. We hope there is no need of impressing upon the minds of all, the importance of early and systematic training. It is encouraging to note what has already been done, but we must remember that it is not only the good beginning but persistent holding out to the last that will count in the end.

One event which we hoped would have been planned for the coming month, is the benefit concert for the Athletic Association, but it has as yet taken no definite shape. There is still a hope that its committee may be heard from soon, and if so we are sure they will meet with hearty co-operation from all the boys.

Next month the trustees will hold a meeting and it is rumored that business of importance to all may come up at that time.

Lastly and by no means least interesting will be the selection of the class base-ball teams. With our present facilities for time and training we cannot expect to accomplish much with a school team, but plenty of work and thought put into class mines will develop talent that may count later in the season
for a few games at least. As the weather becomes warmer there will be seen plenty of life at the Tech if each fellow only puts his shoulder to the wheel and remembers that it is his special duty to put all his force into pushing every scheme that is for the interest of the school.

IN our issue of November last we stated that it was our belief that the W. P. I. had adopted gray and crimson as school colors before they were selected by the M. I. T. Since that time we have been endeavoring, by inquiry and letter, to ascertain just when the colors were adopted here, and although a little apart from our subject we must say that we have been surprised at the lack of interest— to call it by the most charitable name possible—shown by some of our alumni in their alma mater; for, to a number of the letters which we have sent out, we have received no reply whatsoever. On the other hand, we wish to thank those men who have aided us in our inquiries by giving us the benefit of what they knew of the matter.

Among the more recent letters which we have received, is one from Mr. F. E. Appleton, '74, the greater part of which we publish below.

This letter seems pretty strong evidence that at least steel gray was adopted here at Worcester before it was in Boston. We hope to find out later just when the crimson was added.

From the testimony of the M. I. T. graduates, it will be seen that there have been a variety of colors recognized at that Institute.

"You apply to me for information as to 'when steel gray was adopted as the school color here at the Institute'; having been informed by Prof. Smith that I 'had something to do with choosing the color.' I am pleased to tell you what I remember about it. The Professor is quite right—I did have something to do with choosing it, for I believe that the original suggestion that steel gray be the school color of the W. T. I. (as it was then called) emanated from the Class of '74, though in which member's brain it first appeared I cannot say. The matter came about in this wise: During the fall of '72, or possibly the spring of '73—I am not sure which,—some of the '73's became somewhat noisy in their boastful talk as to their ability to 'clean out' an equal number of the '74's in a boat race in ordinary working boats on Lake Quinsigamond. The '74's at once took up the challenge, and a double-scull race for a mile and a half and return was rowed, in which it is needless for me to say that '74 was victorious. Score one for '74. The result of this race so aroused the ire of the '73's that they soon after challenged both the other classes (the '74's and '75's) for another, similar race, which was pulled after each class had, of course, chosen its best oarsmen, and they had had sufficient time for practice together. Again '74 carried off the honors! (Thanks—no bouquets). Previous to the pulling of this last race, the matter of a class color was talked of by the several classes, in order that the competing oarsmen might be properly designated from each other, and their respective friends—and mourners—be be­decked with the corresponding shade. I remember that '74's color, as finally agreed upon, was a rich dark yellow, or, as we called it, 'corn color.' Not that any of us were corned on the occasion. Oh, no! We never did anything of that kind! Of course not. I don't remember the colors chosen by the other classes.

After '73 and '75 had recovered from their defeat, as each individual class had adopted a color of its own, it was suggested by the '74's that the Institute as a whole ought to have a school color, and as the most appropriate, considering the character of the school, steel gray was proposed by '74 to the other classes. After a sufficient
time had elapsed for each class to consider
the matter, a mass meeting of all the stu-
dents was called to take place in the chapel
at a stated day and hour, to act upon the
adoption of a school color. This meeting
was called by posting a proper notice for it,
signed by duly-authorized representatives of
the several classes, on the bulletin board in
the corridor of Boynton Hall. At the ap-
pointed time probably nine-tenths of the
students were present, and without any
marked opposition—if, indeed, there was
any at all—steel gray was adopted by the
students of the W. T. I. as the school color.
This proceeding was afterwards sanctioned
and approved by Prof. Thompson and the
Faculty; perhaps informally, but it was
nevertheless looked upon by them as a good
and proper move.

Now, I am unable at this writing to give
you any exact dates bearing upon all of the
above transactions, but I think I distinctly
remember this fact: That at Commencement
in '73 I was one of the ushers, and
wore a badge made of two pieces of ribbon,
one white and one steel gray, with appro-
priate printing thereon. Perhaps, though,
I am wrong; for it may be that this was our
own badge at graduation in '74 that I am
thinking of. But, whichever way it is,
steel gray was adopted and used as the
school color at the W. T. I. some time
previous to July 29, 1874; there is no
doubt whatever about that. Again, I re-
member that some of us students had taken
pains to ascertain informally that steel gray
was not the school color of the Massachu-
setts Institute of Technology at the time of
its adoption by us.

At the office where I am employed, there
are also three graduates of the M. I. T.—
one, I think, is a '72, one a '77, and one an
's4. I learn from the first one that orange
and purple were adopted as the Institute
colors there in the winter of '68-9; from
the second, that in the winter of '75-6, or
in the spring of '76, the students there
adopted silver gray and cardinal, the car-
dinal being soon after changed to crimson;
and from the third, that certainly since the
summer of 1880 the colors there have
always been silver gray and cardinal—he
never heard of their having had crimson at
all there. Moral—you pays your money
and you takes your choice. Supposing that

the '77 man is right, this would show that
the M. I. T. stole the gray from the
W.T.I., as I know that we had it before I
graduated.

ENGLISH.

THERE is at present, and, unless I
am very much mistaken, there
always has been, a great difference of
opinion among members of the Institu-
tute, and especially of the Senior class,
as to the practical good which comes
from the study of languages to a man
who is seeking a scientific education,
and who intends to devote his life to
scientific work. And it is the object of
this article to briefly consider what
position German and English, the lat-
ter especially, do, and what position
they ought to occupy among the studies
at the W. P. I.

I trust there are none in the school
who are so short-sighted as to say that,
although these studies, like music and
art, are very excellent things to have
mastered, they have no direct bearing
on our particular line of work, and
therefore we cannot afford to spend any
time on them. What a narrow, mis-
leading view of life for a man to have
in this, the nineteenth century; what
a false view, even! We are here, pre-
sumably, to get an education; and
what man would claim to be "educated"
who knew nothing more than what
applied directly to his business or pro-
fession? Such an education could be
obtained by serving out an apprentice-
ship to some carpenter or stone-mason.
Therefore, I will not stop to argue the
question further, but will take it for
granted that the course of study at the
Tech would be wholly incomplete with-
out some training in modern languages. And German seems specially adapted to our needs: its grammar is very systematic, and its literature contains many of the best scientific works, which are almost indispensable to scientific men. Some of the students, however, who believe in studying German, think that it would be a great improvement to substitute some elementary work on science, or something of that sort, for the poetry we read during the last half of our Middle year. To be sure, we would lose a good deal by so doing, but it is a question if we would not gain much more; at least I think the matter is worthy of serious consideration.

The term "English," as used at the Institute, is the name applied to a group of studies, rather than to any one in particular, and includes Rhetoric, Composition, Declamation, History, Biography, Political Economy, and Reporting, as well as Reading and Debating. Being, thus, nearly as comprehensive as the term Mathematics, it fills an important place in our course, and one which we could ill afford to have empty. As the course in English has been conducted thus far this year, the lessons for the most part have been full of interest and value; and yet, to be candid, there are very few members of the Senior class who are satisfied with the course as it is conducted at present. They like the general plan of the work which has been followed, they are interested in the work itself, often too much so, but they don't like so much of it. Now, this may seem like a rather poor objection to a study, but if the circumstances were known I think the justness of it would be evident. It is not the lazy ones of the class who make this objection, but it is those who are in the habit of putting full time on their lessons, and therefore dislike to give up to English time which they feel they ought to put on their other work.

The last half of the Senior year is necessarily a busy one, and little enough time can be given to thesis work at the best; but when one is tempted to devote part of his thesis time to English it really seems too bad. That such is the case, though, can hardly be denied and I don't think it is at all strange that it should be so. If the lessons in any subject are long, and a man has any ambition to do well he will put a little extra time on to them, and neglect his thesis or something else, which does not appear so urgent.

One thing which does not seem to be always considered by the professors is the extra time which it requires to do work at the library. In the first place a half hour is a fair average for the time spent in going to and from the library, and a wait of five or ten minutes more is necessary before the desired book is obtained. The library is a grand institution, but I truly believe it costs the students more waste of time during the year, from one cause or another, than can well be afforded. Besides it is not every one who can spend his time profitably studying in a room full of people, with the accompanying disturbances.

In mathematics some lessons are sure of being so much easier than others that it gives one opportunity to do
a little review work, or extra work. In English, however, such opportunities are rare, very rare, and the work always seems to be accumulating. I believe in making a man attend to business, but I also believe that a man can have so much work to do as to discourage him, or else make him lose all ambition, and leave him to plod sullenly on.

I trust that what has been said will be received in the same spirit in which it is written. The facts stated are an open secret and in view of them it seems as though something should be done. As I have tried to emphasize, a scientific education would be incomplete without a thorough training in English: but English is not the chief thing and must not be allowed to encroach upon other studies while our time is so limited. Evidently a four years' course which would give time for every thing, is what we want, but until that is realized we must he content to stint ourselves in some things.

THE TERRITORIAL GROWTH OF THE UNITED STATES.

WHEN the treaty of peace was framed in 1783, the commissioners of the United States practically named the boundaries of the new republic. Florida and all the territory west of the Mississippi river belonged to Spain; and it was her desire, seconded by that of her powerful ally, France, to have the Alleghanies fixed as the western boundary of the United States. Jay defined the position of his country when he said to the Count de Vergennes, "We shall be content with no boundaries short of the Mississippi." When the same Frenchman wrote to an official in London, saying, "The English buy peace, rather than make it," he showed the feeling which moved the British commissioners in their negotiations. The boundary line, as defined by the treaty, ran up the St. Croix river from its mouth to its source, along the highlands which divide the rivers flowing into the Atlantic, and the St. Lawrence to the head of the Connecticut river, down that river to the forty-fifth parallel, along that parallel to the St. Lawrence, through the middle of that river, Lakes Ontario, Erie, Huron, Superior, the Lake of the Woods and their water connections, west to the Mississippi, along that river to the thirty-first parallel, due east to the Chattahoochee river, down that river to its junction with the Flint river, on a straight line to the head of St. Mary's river and down that river to the Atlantic Ocean. This area, containing over 828,000 square miles, was one of great natural resources. In the House of Lords, the Ohio Valley was described as the Paradise of America. The treaty, concluded by Lord Shelburne, occasioned a long and heated debate in Parliament, which ended with the resignation of his ministry.

Many of the grants under which the colonies were settled, extended westward to the Pacific. On this account, several of the States claimed the region between their present western boundaries and the Mississippi, but in 1790, or earlier, they gave their titles to the national government, and the land became the public domain from which
territories, and afterward States, were formed.

As immigration increased the population in the Mississippi Valley, a new difficulty arose. The only outlet for the thriving trade of the West was the great river, and that was controlled by Spain. One condition of the treaty of Paris was that both nations should be allowed free navigation of the river; but this Spain refused to grant, and also claimed jurisdiction over the land as far east as the Alleghanies. When her minister arrived in this country in 1785, she had withdrawn her claims to all the territory east of the river except the Floridas and the east bank south of a point in the present State of Tennessee. Spain had refused to make a commercial treaty with the United States because of the latter's claim to the river. In 1786 Congress voted to withdraw this demand, but the only result was a storm of remonstrance from the people. In September, 1788, the matter was delegated to the new government which was to be formed the next year. Thomas Pinckney was sent as special envoy to Spain in 1795, and on the 27th of October he succeeded in negotiating a treaty of friendship, boundaries and commerce by which was secured to the United States the free navigation of the Mississippi from its source to its mouth and the privilege of using New Orleans as a port of deposit for twelve years. In case Spain should close that port, another was to be opened.

At the close of the Seven Years War, France had ceded Louisiana to Spain, and Oct. 1, 1800, its retrocession to France was made by the treaty of San Ildefonso, but the transfer was not made till 1803. By neither treaty were the boundaries defined.

The cession of 1800 was a cause of deep regret to our statesmen, as France was considered our worst enemy. On the 2d of October, 1802, Spain abrogated the right of deposit at New Orleans, without naming another port. The excitement caused by these events was intense among the western people, and there was constant danger of collision between them and the Spaniards. At this time, three-fourths of the produce of the United States went through New Orleans. Jefferson saw that he must secure control of the city at any cost, and on his recommendation Congress appropriated $2,000,000 for that purpose. Robert Livingstone, our minister to France, was ordered to negotiate the purchase, and James Monroe was sent to Paris to aid him. At this time, the beginning of 1803, European affairs were working well for American interests. The peace of Amiens was about to be formally broken. Napoleon realized the magnitude of the approaching struggle, and well knew that England's powerful navy could and would make the possession of Louisiana a burden. With this fact in mind, he invited Livingstone to make an offer for the whole province. Jan. 12 Monroe arrived in Paris. Neither minister had authority to treat for the whole of Louisiana. It would be thirty days before they could receive new instructions, and before that time had passed, England might have possession. They saw the immense advantage their country would derive from the purchase,
and decided to assume the responsibility. The treaty was signed April 30, and the price paid was about $15,100,000, of which one fourth was claims of American citizens against France, and the remainder in government bonds. The boundaries were not stated, and this fact was later a source of trouble. Those claimed by the United States were the Perdido river, the Rio Grande, the Pacific and 54°40' north latitude.

The territory contained 1,170,000 square miles. Mr. Blaine has called it the most valuable possession that a European power ever had. Its wealth and resources are almost inexhaustible, but its acquisition brought other advantages which it is almost impossible to overestimate. It gave an indisputable claim to the Mississippi river, and removed all obstacles to growth in the west. It gave great prestige to the United States among European nations, and enabled her to become the powerful republic of to-day. It cut in two the Spanish possessions in America, made the way for procuring Florida, and made it possible for our government to maintain its claims in the northwest.

The Republicans received the news of the treaty with delectation and supported it with enthusiasm, but the Federalists attacked it as unconstitutional. The heated, bitter discussion and intense partisan feeling, which it aroused, have never been surpassed in our later political history. Jefferson made no defense. He admitted that the constitution did not uphold his course, but hoped to have it amended. He said his position was that of a guardian investing the property of his ward.

Spain did not recognize the Perdido river as the eastern boundary of Louisiana, and though the United States did not relinquish her title, it was several years later than 1803 when she enforced it. The disputed district, known as West Florida, extended as far west as the Mississippi river. In 1810 its inhabitants, in convention at Baton Rouge, declared their independence, and soon after Gov. Claiburne of New Orleans, in obedience to an order of President Madison, occupied the province with a military force. Spanish troops held Mobile till 1813, when the whole of West Florida was annexed. It was probably due to the instability of the government at Madrid that this acquisition was so easily obtained.

Among the people of Georgia were found the most vigorous exponents of the scheme to secure East Florida. They declared its possession was necessary for their peace and prosperity. Congress passed bills in 1811 which authorized the temporary occupation of the territory. Commissioners were appointed who succeeded only in stirring up an insurrection, after which President Madison refused to support them. In 1814 General Jackson drove the British out of Pensacola, and in 1818, during the Seminole War, on account of Spanish aid given to the Indians, he led a second invasion which captured St. Marks and Pensacola. These two invasions proved satisfactorily to Spain that Florida was completely at the mercy of the United States, and led to the treaty of 1819. It was signed at Washington, Feb. 22, and by its provisions our country paid dear-
ly for her purchase. In return for 60,000 square miles, she assumed $5,000,000 of debts of American citizens to Spain, and surrendered all claims to the region between the Sabine and the Rio Grande. One article established a boundary between Louisiana and Spanish America. Beginning at the mouth of the Sabine, it ran along its west bank to the thirty-second parallel, due north to the Red river, along its south bank to the one hundredth meridian west from Greenwich, directly north to the Arkansas river, along its south bank to its source, north to the forty-second parallel, and along that circle to the Pacific.

I think it may be said that the struggle begun by the Missouri compromise was continued by the question of Texas' annexation. It is a fact that in the South were the most ardent supporters of the project, and that it was northern influence which delayed its accomplishment twenty years.

When Mexico, in 1821, secured its independence, the provinces of Texas and Coahuila became the State of Texas. The southern statesmen were anxious to maintain their power in the Senate, and a new Slave State would add two senators to their numbers. Emigration to Texas began about 1821 and was probably encouraged by the southern leaders. It rapidly increased, till in 1830 there were 20,000 Americans in the Mexican State. In 1827, Clay, secretary of state, offered $1,000,000, and two years later Van Buren offered $5,000,000 for Texas, but both propositions were rejected. Texas severed itself from Coahuila in April, 1833, and

March 2, 1836, declared its independence, which was recognized after the battle of San Jacinto in the same year by the United States, England, France, and Belgium. The new nation had little except its independence. Its finances were in the worst possible condition, and annexation seemed its most desirable course. In August, Secretary Forsyth received an application for admission, and Senator Preston of South Carolina introduced the proposal in the Senate. It was immediately tabled. To aid its finances, Texas then began extensive land sales mostly to citizens of the United States who became advocates of annexation. When President Tyler offered Calhoun the state portfolio, the latter's only object in accepting was to serve the South by aiding the southerners' project. April 12, 1844, he concluded a treaty with Texas which was rejected by the Senate. In the memorable campaign of 1844, the Texan question was the chief issue, and Polk, the annexation candidate, was elected. As this was a popular endorsement of the scheme, many new friends were made for it in Congress. A joint resolution passed the House in January, 1845, consenting to the admission under the following conditions:—Evidence of the formation of a State government should be sent to Congress on or before Jan. 1, 1846; public property of the Republic should be transferred to the United States; new States, not exceeding four in number, besides the State of Texas, might be formed in the future from territory within its limits. After the necessary conditions were fulfilled,
President Tyler, as the last official act of his term, signed the bill of admission; and in June, in a state convention, Texas passed resolutions of ratification. 376,000 square miles were thus added to the domain of the United States, including all the territory between the Sabine and Rio Grande.

The direct result of the annexation was war with Mexico. That power claimed that the Nueces river bounded Texas on the south. General Taylor, who had occupied the State with an army, marched into the disputed region in April, 1846. A small conflict with the Mexican troops followed, which resulted in a declaration of war by Congress, May 13. General Fremont, aided by Commodores Sloat and Stockton, conquered Upper California, while General Kearney gained possession of New Mexico. General Taylor's campaign in the Rio Grande and General Scott's successful invasion, enabled our government to dictate the terms of peace.

Soon after the beginning of the war, President Polk asked for an appropriation of $2,000,000 to be used in negotiations with Mexico. A bill, putting that sum at the disposal of the executive, was introduced in Congress to which was attached an amendment what has since been known as the Wilmot proviso, which prohibited slavery in all the territory which might be acquired. This was the cause of another struggle between the North and the South, which proved to be longer and fiercer than that over the Missouri compromise. The amendment was defeated in the end, but the bill passed.

The treaty of peace was signed at Guadaloupe Hidalgo, Feb. 2, 1848. By its terms, the Rio Grande was made the southern boundary of Texas, and the United States was allowed to retain all of the country conquered by Fremont and Kearney, while Mexico received $15,000,000, and was relieved of claims of American citizens amounting to $3,250,000. This cession included 545,000 square miles.

By reason of inaccuracies in the maps used in these negotiations, it was not clearly decided to which party belonged that portion of Arizona south of the Gila river. General Santa Anna invaded the district, but war was averted by the Gadsden treaty, which was signed Dec. 30, 1853. For $10,000,000 Mexico gave up her claim to the territory, which embraced about 45,000 square miles, and granted our government the privilege of transporting troops, mails and merchandise across the isthmus of Tehuantpec.

The area between latitudes forty-two degrees north and forty-four degrees, forty minutes north, has been claimed by Russia, England and Spain. The first two governments based their claims upon exploration and occupation by free traders. Spain's title, which was founded on discovery and occupation as early as the sixteenth century, was transferred to France in 1800, and to the United States by the cession of 1803. In 1792 Captain Gray discovered, explored and named the Columbia river, and our country, as a result of his work, claimed all the land drained by the river and its tributaries. In 1824, by a treaty negotiated between
the United States and Russia, the parallel at fifty-four degrees and forty minutes was made the dividing line between the domains of the two Countries. A little later Russia agreed with England to fix the same line as the southern boundary of her possessions, thus leaving our government and England the only two claimants. Several American fur companies tried to establish posts in the northwest, but all were unsuccessful, with the exception of Astoria. In 1827, a treaty was made with England, which allowed the region to remain open for settlement by both parties for ten years. About 1832 immigration from the States began, and by 1845 the number of settlers had reached three thousand, all of whom were south of the forty-ninth parallel. In the campaign of 1844 the boundary question had an important place. "Fifty-four-forty, or fight," and "Re-annexation of Texas, and re-occupation of Oregon," became party watchwords. The Monroe doctrine was strongly urged as a reason for enforcing our demands. War with England was not improbable, and to avoid it, the leading Whig statesmen favored a compromise. This was effected by a treaty made June 12, 1846, which established the boundary at the forty-ninth parallel as far west as the channel between Vancouver Island and the main land, thence down the middle of that channel and through the straits of Juan de Fuca to the Pacific. Both nations were given the right of navigation in the channel. When the commissioners endeavored to run the line, a dispute arose as to where the middle of the channel lay.

It remained an open question till 1871, and was then settled by the treaty of Washington.

The last acquisition, Alaska, was purchased from Russia by Secretary Seward in October, 1867, for $7,200,000. It contains 577,000 square miles, and with the exception of Louisiana is the largest addition ever made.

The effect of any single cession is largely the effect of all. The most evident result is the large increase in wealth and population, by means of which the United States is now ranked among the largest and most powerful nations on the globe.

The influence of these additions upon the history of slavery is a broad and interesting subject. It extends from the admission of Missouri by the famous compromise measure, to the close of the civil war. It includes the Wilmot proviso, the Kansas and Nebraska bill, and the compromise of 1850. Four of the eleven secession States were within acquired territory, and these added not only to the military strength of the Confederacy, but enabled it to obtain a firm hold on the Mississippi river and Gulf of Mexico in the early years of the war.

The United States is now the guardian of the American Indian, and as such, has enacted a large amount of Indian legislation, and has been a participant in a long series of Indian wars, ending for the present with the capture of Gerimine and his band. The duty of keeping our extensive frontier in order, has made it necessary to establish many military posts, and has
furnished useful employment for the standing army.

The policy concerning the public domain has occupied the attention of Congress for years, and has been benefited by the ability of Hamilton, Jefferson, Madison, Gallatin and many other statesmen. The General Land Office was established by an act of Congress, April 25, 1812. Its immediate head was a commissioner appointed by the President, but it was placed under the general supervision of the Secretary of the treasury. In this office was transacted all business pertaining to the public domain, as sales, grants, land and geological surveys. On March 3, 1849, the Interior Department was created, and the General Land Office was transferred to its control. It now carries on its enormous work in fourteen divisions, and its records might well be called the Domesday Book of the public domain. A few statistics will show to what uses this vast area has been put. Within the territories, which have been formed from it, there have been granted under the homestead and pre-emption acts, 275,000,000 acres; 61,000,000 acres have been granted to soldiers; 78,000,000 acres for educational purposes; 69,000,000 acres of swamp lands to the States which have been reclaimed; 154,000,000 acres to the Indians; and 155,000,000 acres to railroad companies. Emigration, which began in 1849 and has increased so rapidly since the war, has been made possible by the immense territorial development.

Professor Curtis says the American people have a strong spirit of acquisition; and we can willingly agree with him, after tracing the history of our broadening boundaries for a century.

NOTES FROM THE FEBRUARY MEETING OF THE AMERICAN INSTITUTE OF MINING ENGINEERS.

Wednesday was spent mostly at Edison's Phonograph Works at Llewellyn Park, N. J. This is Mr. Edison's home. His library at the works will hold fifteen thousand volumes, and the lower floor will seat two hundred and fifty people besides. Here a very fine lunch was provided, and papers were afterwards read on the applications of electricity in mining operations, also one on a method of separating magnetite ore recently invented by Mr. Edison. Underneath a very oblong hopper and a little on one side of the vertical from the bottom of the hopper, are arranged in horizontal line a number of strong electro-magnets. These draw out the magnetite from the descending stream of mingled ore and dirt and cause it to fall inside a bin constructed for its reception, while the earthy portion which is not attracted by the magnets falls outside. In this way it is estimated that 600 tons of refuse, or dump ore, heretofore considered worthless can be separated in a day by one machine, at a cost of two cents per ton. One of these separators has been erected in Pennsylvania, and another will soon be put up near Port Henry, N. Y., where are said to be millions of tons of dump ore containing thirty to forty per cent. of pure magnetite, or say twenty per cent. of iron. Of course the material must be broken quite
fine, in order to render all the magnetite crystals detachable from the gangue rock, but a great deal of the material of these dumps is very fine already. To the objection that so fine ore would choke the blast furnace, Mr. Andrew Carnegie, who was present, replied that if mixed with coarsely broken ore in proportion of one-fourth to three-fourths of the latter, there would be no need of trouble in the smelting. One of these separators was in operation at Llewellyn and attracted much attention.

But the phonographs were the centres of interest. The vibrating discs of these are now made of glass one and a half inches in diameter and one-hundredth of an inch in thickness, and the cylinder which receives the impression is of rather hard paraffine, five inches long and a little over two inches in diameter. One of these cylinders will last for one thousand reproductions. Three thousand of these phonographs have just been finished and will be ready for delivery this (the first) week of March. It is not proposed to sell them, but a company formed in New York will rent and care for them, supplying a certain number of new cylinders as may be needed, for about $40 per year each.

After visiting the phonograph factory the members the Institute were invited to the hall over the Library where were heard a variety of phonograph reproductions. First and loudest was that of the music of a band. This was audible anywhere in the room, as was also the cry of the dolls whose bodies were phonograph cylinders and which repeated "Mary had a little lamb," etc., as often as the clock-work was wound up. Other phonographs reproduced the music of a piano, or that of a cornet, or a song, as each had heard one of these, but the reproduced sounds were too faint to be distinctly heard with the ear alone. If, however, a rubber tube tipped with glass was led from the cap over the resonating disc to each ear, the reproduction seemed as distinct and nearly as loud as the original.

The Edgar Thompson Steel Works near Pittsburg, Pa., have in successful operation two open-hearth basic steel furnaces—in which the linings are of tar-dolomite and which receive quicklime in addition under the charge,—and four more are being erected. This process bids fair to be the most available one for the elimination of phosphorus. The failure of the Hainsworth (Bessemer) steel gun, and the success of the Siemens-Martin metal for the same use will contribute not a little towards the more general adoption of open-hearth methods.

Interesting papers were read and interesting discussions followed on the proper weight and shape of section of steel rails. It was freely admitted that the modern rail did not render nearly so good service as that rolled ten to fifteen years ago. Something of this might be due to inferior quality of the pig-iron, but it was the general opinion that the modern rail was too light, the head or top too narrow and high, the web too thin, and the flanges too narrow and thin for the best service and for good economy of material.

One of the most interesting sessions was held at Stevens Institute, and the papers were made doubly clear by the diagrams shown by the stereopticon.
One of these was on the efficiency of various forms of air-compressors, and on the special causes and remedies of freezing of the pipes of these compressors in cold weather.

The Lock-wire rope manufactured by Cooper, Hewitt & Co., at Trenton, was shown and the method of manufacture explained. This bids fair to supersede other forms of wire rope, especially for heavy work.

Not the least instructive of the exercises of the Institute were the visits to the plant of the New York Steam Heating Co., to that of the Consolidated Gas Co., and to Fort Lafayette, where dynamite shells are projected by Captain Zalinsky's air gun.

THE INTERCOLLEGIATE Y. M. C. A. CONFERENCE.

The situation of the W. P. I. in a city so centrally located in New England, brings us peculiar advantages in the way of intercollegiate athletic meetings and conferences. It was a rare privilege that the seventh annual convention of the intercollegiate Y. M. C. A. of New England could be held in Worcester under the auspices of the Worcester Academy Y. M. C. A. and our own. The meetings were held Feb. 15, 16 and 17. On the afternoon of Friday, the 15th, the college delegates began to flock in, thirty-six coming from Yale alone, while Harvard, Amherst, Williams, Bowdoin, Boston Tech, and many others were all represented to the number of one hundred and forty. Many delegates were in the city for the first time, but as one of them expressed it, "We had only to follow the line of carpet-bags, which stretched from the Depot up Front Street, in order to find our way to the Y. M. C. A. rooms." Secretary McConaughy had kindly given the use of the city association building for the Conference, and all the services were held there, except the first, which took place at Union Church Friday night. All the afternoon, the blue-ribbon committee of twenty men from the Academy and Tech, were kept busy showing the delegates to the rooms assigned them in the homes of the generous city people, who had so kindly volunteered to entertain the college men.

At 7 P. M. the delegates began to assemble at Union Church, where an informal reception was held and hearty greetings exchanged. Here one could see the quality of men present. It is safe to say that a more manly, vigorous, fun-loving crowd of young men could not be found anywhere, and yet in their faces, a look of earnest purpose shone through all their enthusiasm, which would distinguish them from any other gathering of young men. Here we find many stalwart men noted in their colleges for athletic prowess. The great pitcher from Yale, the vaulter from Harvard and base-ball and foot-ball men in profusion from all the colleges. In view of these facts the address of the evening upon the "Christian Athletic," which followed was peculiarly appropriate.

The opening meeting of the convention was presided over by Secretary F. K. Sanders of Yale, who spoke a few hopeful words that the convention would be helpful to all and he then
called upon Dr. H. T. Fuller of the W. P. I. and Prof. D. W. Abercrombie of the Academy. Both gentlemen responded with happy addresses of welcome after which Rev. C. S. Beardslee, D.D., of Hartford, gave the address of the evening upon the words “Fight the good fight of faith.”

At the conclusion of this address an earnest consecration meeting was held, after which the delegates went to their rooms.

The school exercises Saturday morning were kindly omitted by the Faculty, and many Techs attended the Convention, which opened with reports from the different colleges. Yale made the best showing with 415 members out of a college of 1,264 students; while Amherst, Williams and Bowdoin, had strong associations. The Worcester Academy reported 84 members out of 145 in school, and the W. P. I. had 43 active and 48 associate out of 155 students in school. The methods of work at the different colleges were presented, and proved very interesting. In the afternoon Secretary Mott discussed the Training Class, and Deputation Work was presented by A. H. Barr, of Princeton. In both discussions the need of more and better-organized work was shown, and many new hints mentioned.

Saturday evening, Prof. W. R. Harper, Ph.D., of Yale, delivered his celebrated address upon the Book of Joel, studied inductively. This book is one of the most obscure and mystical of the minor prophets; but the address of Prof. Harper showed conclusively that if the bible were studied in the manner we study our school-books, it would be comparatively easy to understand.

R. P. Wilder, who has been instrumental in influencing nearly all of the 3,200 college students now in the Mission Band to pledge themselves for work in the foreign field, was the next speaker. He urged the great need of the field where eight hundred millions of human beings have never heard one word concerning Christ. His earnest words set many to thinking upon the subject.

Sunday afternoon Mr. Mott led the young men’s mass meeting, taking for his subject, “Personal purity and nobler lives.” In the evening the farewell service was held, and short addresses given by Messrs. Wilder, Ober, Reynolds, Mott, Gen. Armstrong, and others. The meeting then broke up, although social talk and good-byes continued long afterward. All were unanimous in saying that the convention had been one of the best ever held, for it had inspired each delegate with higher aspirations, and prepared him to engage intelligently in Y. M. C. A. work. H. C. S.

Scientific Notes.

According to Prof. W. Spring, the comparative freedom from rust of rails over which there is much traffic, is due to the combination under the pressure of the wheels, of furic hydrate with the metal of the rail, thus forming the magnetic oxide which protects the rail from further oxidation.

The announcement was recently made that Professor Gerhard Kruss, of Munich, had succeeded in decomposing nickel and cobalt. But German chemical periodicals show that what Prof. Kruss has really done is to obtain from
both nickel and cobalt a new element which was contained in them as an impurity. The two elements, nickel and cobalt, thus remain elements and have not been decomposed into any simpler substance.

An Englishman has recently invented an electric weighing machine. It is entirely operated and controlled by the current of a small constant battery concealed in the base. The machine is of the knife-edged lever type, and is provided with three movable poises or slides. On the goods to be weighed being placed on the platform these poises start automatically and travel forward on the steelyard until they balance the goods; the correct weight is then shown by the machine in a single group of figures. On the goods being removed from the platform all the poises automatically return to zero, the last one breaking the battery circuit and preventing any waste current.

At the present time street cars are run in New York 36 miles by the Julien system without change of battery; and it is expected that four trips, or 48 miles, can be accomplished without change, as at the end of the third trip, the voltage is above 2 volts per cell. Twelve miles are run on an expenditure of less than 15 H. P. Calculating the cost to be 2 cts. per H. P. per hour, it costs 30 cts. for energy for a round trip of 12 miles, or 24 cts. per mile, exclusive of wear and tear. Even better results are expected with new cars now building as they will be furnished with a far more efficient motor than these now in use, and the weight of the cars will be at least 2 tons lighter than those running.

The covered reservoirs of Carthage, dating back full 2000 years are being restored by the Gas and Water Company of Tunis. These reservoirs cover a space 420 by 89½ feet and are divided into 18 communicating departments. They have been used several times before in widely separated periods. They were in full working order in the time of Hannibal, were again repaired under the Emperor Hadrian, and have been entirely neglected since the eruption of the Arabs, in A.D. 697, until the present French company took them in hand again. From the description given in Le Genie Civil, it would appear that the French engineers are practically reviving the plans of the original Carthaginian engineers; a remarkable instance of the ebb and flow of civilization in this ancient corner of our historical world.

—Engineering News.

The Berlin society for the Promotion of Industry has decided on the following prize problems:—

1. 6000 marks and a silver medal for the best solution of the question: How far is the chemical composition of, and particularly the amount of carbon contained in steel, a standard for the usefulness of cutlery and edge tools? Time of answer, Nov. 15, 1890.

2. 5000 marks and a silver medal for the best treatise on mechanical engineering applied to the construction of machinery. Time of answer, Nov. 15, 1890.

3. 3000 marks and a silver medal for the best chemical and plupical inquiry into the nature of iron paints most used. Time of answer, Nov. 15, 1894.

The following problems are to run on also until Nov 15, 1890:—

4. 4000 marks for the best description and actual estimate of such lifts as are most generally constructed for the moving of persons, baggage and goods in factories, hotels, public and private buildings, arranged after their different kinds, as well as of the necessary safety, precautions and their tests; and finally of the regulations of police and trade companies for the building and arrangement of their lifts, the cost of construction, the working expenses and necessary space.
5. A silver medal and 3000 marks for a description of the chemical processes which take place in producing pure cellular fluid from wood and other vegetable substances by means of soda and other sulphide processes. For the second best answer the society of Wood Cellular Material Manufacturers have placed at disposal a prize of 1000 marks.

Some of our chemists and engineers should compete for these prizes.

**College News.**

Oberlin's new colors are Red and Gold.
The University of Pennsylvania has established a course in photography.
There are seven magazines published at Johns Hopkins.
Adelphi Academy at Brooklyn has a new gymnasium.
There are 1222 students at the University of Pennsylvania.
The University of Cincinnati holds no chapel exercises.
The ladies of the University of Minnesota wear uniforms.
There are thirty men at Dartmouth in training for the Worcester team.
*Red and Blue* is the name of a paper published at the University of Pennsylvania.
Lange, of the Manhattan Athletic Club, walked a mile in 6½ last month.
The Trustees of Princeton have given Dr. McCosh a pension of $2,500, whether engaged in his duties or not.
Boston Tech will probably have no base-ball team for the coming season.
Harvard is to have a new athletic field large enough for two base-ball diamonds.
The Bowdoin College nine will make no Massachusetts trip this year, but will put their spare cash toward employing a professional trainer.
Brown has elected Mr. J. Williams as manager of the Worcester team. He has several men in training and promises that Brown shall do better than last year.
At Monmouth College ninety-six percent. of the students are church members.
The Sophomore Class at Lafayette was suspended last Friday for hazing. Before leaving Easton they were photographed with grip-sacks.—*Ex.*
Students at Harvard are not allowed to choose over three hours per day for recitations without express permission from the Dean.
Cornell students were photographed in one group not long since; there were over eleven hundred faces shown in the picture.
Yale has accepted the challenge of Cornell to a four-mile race on the Thames river at New London.
A running track has been built in the gymnasium at Dartmouth, and is used daily by several men.
Fifty or more students of Johns Hopkins University appeared on the stage a few weeks ago as soldiers and citizens supporting Booth and Barrett.—*Ex.*
Harvard is to have a new dormitory to cost $200,000, the gift of Walter Hastings.
Worcester Academy has been admitted to the Interscholastic Athletic Association.
The University of Toronto proposes to send a base-ball club on a tour of the American colleges.
*Ex*-Minister Phelps has accepted the presidency of Columbia. His salary will be greater than any other college president in America.
Over three million dollars has been raised by the Roman Catholic Church to found an university at Washington, D.C.
Theo. B. Wannamaker has given one million dollars to Princeton, the income to be given annually as a prize to the student performing the best work in English history and language.
Hugh H. Baxter, of the New York Athletic Club, beat all previous records in pole vaulting last Friday, having
vaulted 11 ft. 3 in. The best previous record, also made by Baxter, was 10 ft. 9 in. Sherman, of Yale, won second prize with an actual vault of 10 ft. 5½ in. —Crimson.

Wagenhurst will receive a salary of $1,400 for the season, from the New Yorks.

Amherst has prepared an extensive exhibit for the World's Fair at Paris.

On the campus of the University of the Pacific, there are flowers blooming throughout the entire year.

At Yale no graduate can receive his diploma until he has paid all debts contracted about the town as well as at the college.

Lasell Seminary for ladies provides for special instruction in swimming. The Leaves proposes to start a Lasell life-saving station.

The Dartmouth criticises the method for raising money for athletic purposes which has usually been employed at the college, and proposes that a tax of ten dollars each per annum be imposed upon each student for this purpose.

A table of minimum yearly expenses for several of the most important colleges of the country, gives as the four most expensive: Harvard, $700; Yale, $650; Columbia, $600; and Rensselaer Polytechnic Institute, $650.

An exchange tells us of a certain freshman who, after forcibly expelling an upper-class man from his room, remarked, "I may not be able to work miracles, but I can cast out devils."

The Tech recommends editorially that the M. I. T. apply at once for admission to the New England Intercollegiate Athletic Association.

The recent sensation caused by the bomb throwing at Wesleyan has been greatly exaggerated by the general press. The Argus says that the entire damage to buildings and property will not exceed fifteen dollars and it has also been proven that no mischief was intended but that a careless blunder on the part of an outsider was the means of turning a college prank into a serious catastrophe.

The two following clippings will show that the western college students are not wholly unlike their eastern brothers:

In the mineralogy class, the other day one of the boys woke up long enough to ask, "Professor, was that the largest nugget ever found?" "I just told you of one twice as large," replied the professor, and Anxious Inquirer took another nap.—Ariel.

It is an old joke, but we cannot refrain from springing it again, that no anaesthetic known to the materia medica can compare with Gano's physics. We defy any man to read it one hour and keep awake, or to give a coherent synopsis of what is in it after he has read it. Morphine, opium, and laudanum are not to be compared with it.—Illini.

Nearly all the colleges which are members of the N. E. I. A. A. seem to be making an unusually energetic effort to improve on their last year records. We hear of plenty of new men of whom great things are expected. Dartmouth has thirty men in constant training and Amherst nearly as many more. The other colleges have got their men at work but the teams of course are considerably smaller, however, Williams and Brown each mean to make themselves felt. The new men have mostly as yet to make themselves known, but among the men who are to contest next May the following will be recognized as taking part last year:

From Dartmouth: Ellis, two-mile run; Rowe, mile run; Sparhawk, bicycle; Doring, tug of war (anchor); Canty, tug of war.

From Brown: Hovey and Warren, pole vault; Messer, bicycle; Menchenhall, 100 yds. dash; Williams and Willard, putting hammer and shot.

From Wesleyan: McDonald, ½ mile and 100 yds.; Slayback, 100 yds. and
running broad jump; Eaton, putting shot; Floy, 100 yds. dash. All four of which men were on the foot-ball team which played Worcester last fall.

From Amherst; Porter, ½ mile; Delabarre, bicycle; Wells, mile run; Luddington, hurdle races and jumps; Gilbert, who has been making very fast time in practice, 2-mile run; Holton, ½ mile run; Watkins, throwing hammer; Bagg, bicycle. Among the new men at Amherst are Chancellor, ½ mile run, and Henderson, mile walk, both of whom are expected to win events.

Exchanges.

Among our new exchanges for the month, we take pleasure in reviewing the Academy; a lively little monthly published at the Worcester Academy. The editorial column is well conducted, and the whole paper is replete with original matter. If we were to criticise in any way, our suggestion would be that the Academy devote more space to local news.

The editors of the Undergraduate are wide awake for the interests of their college. The February number is particularly interesting, being filled with advice and suggestions to both students and faculty. We could hardly repress a smile on reading one of the articles, at the picture presented of the students at chapel shivering around the one old-fashioned stove which heats up one corner of the room, while the others remain frigid. We are sorry for them, but we must save our sympathy for our own civils, who are called out during the early hours of the morning and ordered into a drawing-room where even the steam-pipes are cold enough to put an Arctic ice-cream freezer to shame. Cheer up, Green Mountain brothers; the spring is coming soon, and with it warmer days.

An article in a recent number of the Tech assails our institution and its students in a style so decidedly different from the usually quiet manner of that worthy contemporary that we cannot think of it as in any way voicing the sentiments of its publishers. The piece seems more like a sort of vicious outburst of some disconsolate individual who, wishing to give vent to his feelings, commences by throwing mud at his little brother, as he calls us. We would much rather let the matter rest but in justice to our school we cannot let this uncalled-for attack pass by without vindicating ourselves. In the first place we challenge the statement that Worcester has appropriated the college colors of the M. I. T. There has been considerable friendly discussion between the two schools lately over the fact that both (presumably by coincidence of chances) have been using the same combination of colors. Recent developments, however, seem to prove that Worcester Techs sported gray and crimson some years before the colors were thought of at Boston, and if any appropriation has been done Worcester at least is innocent.

But this is not all. Our big brother goes on with his complaints by lamenting the infallibility of the Boston papers in mixing up the names of the two Techs in a report of a theatrical scandal which went the rounds of the dailies not long since. The Tech man not being satisfied with the manner in which the Boston press had mixed matters up and misrepresented the whole event, added some variations of his own and succeeded in giving his readers a piece of the most twisted and exaggerated gossip that it has ever been our misfortune to read. It is a lamentable fact that certain of our men were involved in an affair which gave an ambitious reporter basis upon which to build a disgraceful scandal; but words in print are too late to be mended how-
ever false they may be. Still we have
the consolation of knowing that all who
are acquainted with the facts of the
case know that our students have been
grossly wronged by certain ignorant
and partial reporters.

**Technicalities.**

Don't copy other students' answers.
Don't steal the Preps' hymn books.
The Banjo Club has been very suc-
cessful and will doubtless be in exist-
ence next year. We hope the same
for the Orchestra.

Though it is not an inspiring place
endeavor to have some propriety while
in the chapel.

Dadmun recently spent as many as
ten hours in the shop without cutting
himself. He performed the feat in the
tool-room.

It is no sign that Armstrong is not a
skilled musician because the Chapel
organ is too many for him.

The demand for twist-drill grinders
has been too large to admit of any
being kept in stock. Efforts are now
being made to keep up with the orders.

A new litter of about twelve dogs
has been purchased by the shop. They
are of all sizes but of one breed and
may be seen for the asking.

The Preps have been warned against
the example set by one division of the
Middlers, but in one respect they imi-
tate them closely and the noise which
frequently issues from the shop wash-
room, about five o'clock, is simply
appalling.

A stove-plate grinder for a Phila-
delphia concern has been made at the
shop, and over a dozen ordinary
grinders have been sold in the past
month. A speed lathe has also been
completed for Brown & Sharpe of
Providence.

A visit to the new laboratories shows
the progress, a rapid one in appear-
ces, which has been made in the
past month. We may take just pride
in our building when it is completed.

Many of the students come very near
being suspended without actually enter-
ning that uncomfortable state, and letters
to our parents begin to be seen among
the bric-a-brac in the students' dens.
Our anxiety would be greatly dimi-
ished if the position in which we are to
be suspended was made known, and
whether it should be from the weath-
vane of Boynton Hall or from the
lamp-post on the driveway.

Several are sick with measles but
on inquiry it was found that only
half a dozen of the students had
suffered from that disease, so it was
decided not to quarantine the school.
The incident, however, gave rise to
the suggestion that a clause be inserted
in the next catalogue advising can-
didates to have the disease before becom-
ing members of the Institute.

Prof. Alden's engine is completed
and ready for work. Not so the lathe
which '89 is building, and it now ap-
pears that '90's workmen will have the
pleasure of putting on the finishing
touches.

Mr. Walls is still at Coney Island
setting up the elevators for the Chute
at that resort, which is to be used in
elevating human beings to an eminence
to the end that they may slide down
again.

Spring is coming and with it the at-
tendant mud at the bottom of the Tech
hill. We wish some scheme might be
devised by which students could be
landed dry at Boynton Hall.

In accordance with lines 21—24,
page 35, of the revised catalogue of the
Worcester Polytechnic Institute, for-
merly known as the Worcester County
Free Institute of Industrial Science,
the Banjo Club of the W. P. I. has
been limited to one engagement per
week. Russian papers please copy.
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