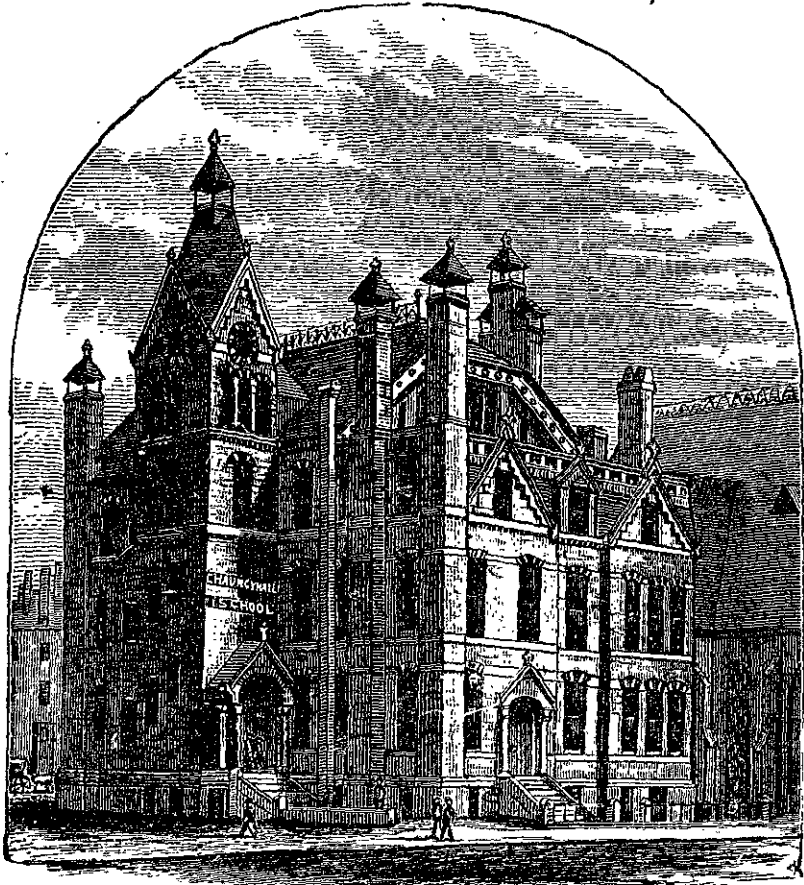


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# The Tech.

VOL. V.

BOSTON, OCT. 21, 1885.

NO. 1.

## THE TECH.

Published on alternate Wednesdays, during the school year, by the students of the Massachusetts Institute of Technology.

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ONCE again we have met at the Institute, after our long vacation. Last May we left with feelings of pleasure at having finished a year of hard work, and the prospect of a pleasant rest during the summer; and now we return with the same feelings at the thought of meeting our classmates again, which were mingled with regret at finding some of them absent. The well-known faces of our friends in '85 are missing this year, and in their stead we find the host of new men in '89. It has taken us some time to get accustomed to the changes, but by this time all have settled down to work, and everything goes on again as before.

With this number THE TECH begins its fifth volume. It has safely weathered its financial storms, and, we hope, has now become a permanency. Our improved financial condition must not, however, become an excuse for the withdrawal of pecuniary support, for we still have

much to do in the way of improving the magazine. But it is for another kind of support that THE TECH must more than ever before look for this year. It is in the line of literary contributions. The men who have heretofore done most of the writing for THE TECH have now graduated, and we must have others to take their places. It is impossible for the editors to do all of the literary, in addition to the purely editorial, work of the paper, so we must count upon outside contributions.

To the Juniors and Freshmen, particularly, we will say that there is still an editor to be chosen from each of these classes. The men best qualified for the positions will be selected, and hence we invite competition for the places.

In conclusion, we ask again that we may hope to continue to receive the financial and literary support which will enable us to retain our position in the front rank of college journalism.

IT is hoped that the Glee Club will be reorganized this year, and continue as successfully as it has during the past two years of its existence. The hearty support and encouragement, financial and otherwise, given it by the students at large, have shown how much it was appreciated as a means of contributing to the social part of our life at the Institute, which, as we all know, necessarily comes in for a small share of our time. Many of the original members of the Club are no longer at the Institute, but there is plenty of new material at hand, ready and able to take their places.

At present, it is difficult to find any one capable of filling the position of musical director; but does it not seem as if in a college of our size, numbering from six to seven hundred students, at least one might be found competent to fill the place!

Other colleges smaller than ours maintain

well-trained glee clubs, which never think of dying out. Let us try and make the M. I. T. G. C. a permanent one. If only for the credit of the thing, let the members who remain, and all others musically inclined, do all in their power to stir up interest in the matter, reorganize and fill up their ranks, and it is safe to say they will receive the hearty indorsement of all.

THE prospect of our foot-ball team, this year, is most encouraging. The old foot-ball association being defunct, a new one has been formed in its stead, which, so far, has shown itself to be very wide-awake and enterprising. It has been proposed by the association to form a Northern New England foot-ball league, to include Amherst, Williams, Tufts, and Dartmouth Colleges, and the Massachusetts Institute, and an account of the proceedings of the convention held at Springfield, to take action upon the subject, is given elsewhere. Not for several years has so much interest been shown in foot-ball, at the Institute, as at present, a large number of men having been trying for the team. Nearly all of last year's eleven are here this year, and it will be greatly strengthened by some new additions. The team is to go into strict training, and will probably have a trainer.

In view of this encouraging outlook, it is the duty of all to give good support to the team, both by subscriptions and by attending the games. Since the team have showed their intention to try to do something, none will now have the excuse for not subscribing, that the eleven themselves did not have any interest in the games. Foot-ball is a grand good game, and let all do whatever they can to make it a success at the Institute.

THE Junior class is to institute a custom here, which has long been needed, and which we hope the lower classes will take care to continue. We refer to the publication of the Junior annual. Although such a thing has been talked of before, it has remained for the class of '87 to undertake it, and we hope that they will succeed in their attempt. To insure its success, the annual must

not be a class affair, but must have the united support of all classes. We wish that the editors had chosen a more original name than *Technique*, but, realizing the difficulty in selecting a title for a new publication, we shall not criticise in this direction. The book will be published in December, and, in form and contents, will be similar to the annuals of other colleges.

The editors of the *Technique* have our best wishes for success.

AS this number will reach a good many who have never seen THE TECH before, a word about the cartoons and initials will not be out of place. We are dependent for them on the students, and it is earnestly hoped that all who can draw, will make the effort. The drawings are to be made on smooth, white paper, in india ink, so that the lines will be regular and even. Wedding bristol-board is good for the purpose. Above all, the ink must be ground perfectly black; a failure in this respect will utterly spoil the work. All drawings should be accompanied by the name of the artist, as without it none can be accepted.

IN an institution of the size of the Institute, the students patronize a wide list of business firms. To some, in particular, we give a substantial support. It is the aim to have our advertising columns contain those firms thus patronized; and, in addition, they contain those who would solicit business. We intend to have in each line of business representative firms, and can thoroughly recommend such as appear in our columns. To the entering students of this year we would call particular attention to the above.

MR. N. C. DRAPER, '86, has resigned his position on the Board of Directors of THE TECH, having left the Institute; and Mr. W. H. Chadbourn, Jr., '86, has been elected, by his class, to his place. Messrs. W. M. Taylor, '86, and F. L. V. Hoppin, '88, have been elected editors of THE TECH, and begin their duties with this number.

### Singing Sands.

UNTIL quite recently, but two of the so-called "singing-beaches" were known to exist—one in Europe, and the other at Manchester-by-the-Sea, Mass. Within the last few years, however, the attention of scientific men having been called to this subject, it has been found that their existence is far more common than was at first supposed. In the early part of 1884, the superintendents of the various life-saving stations on our sea-coast were instructed to furnish samples of this sand, wherever found, and twenty-six specimens, from as many different places, were received. It is said that the number of American localities has now been increased to seventy-four, while in foreign countries it has been reported in thirteen places.

Singing sands derive their name from the noise which they produce when walked upon, or otherwise disturbed. The sound is one of low pitch and intensity, and may be likened to a subdued crunching; it is shrill, but not metallic, nor crackling. The sound is slightly perceptible when the sand is merely stirred by the hand, is made quite audible by the pressure of the foot in walking on it, and is much intensified by drawing a board or plank over it. Prof. Bolton, of Trinity College, Hartford, who two years ago began the study of this subject, states that by simply driving a stick into the sand of the beach at Manchester, a sound was evoked, which, by actual measurement, could be heard one hundred and forty feet, even with the noise of the surf breaking on the beach. Without doubting this statement, it will not be out of place to say that, upon the occasion when this measurement was made, all conditions must have been very favorable for the transmission of the sound.

The singing beach at Manchester is about one fifth of a mile in length. The sand is coarse, and compact even when dry. The grains of sand are more angular—quite a proportion of them are flat—than the ordinary beach sand, and are mostly pure, glassy quartz, the others being feldspar. The sonorous phenomenon is shown only by the sand lying below

the extreme high-water mark; but within that limit there are patches, here and there, closely contiguous to the musical portions, which are silent. The beach terminates in ledges of feldspathic rocks, which are intersected by numerous dikes.

The most information on this subject has been contributed by Prof. J. C. Bolton, before mentioned, and Prof. A. A. Julien, of the Columbia School of Mines. The facts, as far as known, are these: the singing sand may occur in comparatively small patches in the midst of ordinary sand; it always occurs between the limits of low tide and extreme high tide; the same sand does not produce sounds at all seasons, nor does it always give forth like sounds; when wet they do not emit sounds, and frequently become quicksands. It was also noticed that samples of this sand when transported in bags lost its sonorous property, but retained it when sent in bottles.

Of course, many theories have been advanced to explain this peculiar property of certain sands, but, to the knowledge of the writer, no satisfactory one has yet been offered. It was first said that it was caused by a thin film of salt deposited around the particles of sand by the waves, which being pressed gave forth the sounds previously described. This theory was exploded when sand having the same property was found on the shores of bodies of fresh water. Like many other inexplicable phenomena, this has also been ascribed to electricity. Some investigators say, that it is because of the friction of flat and angular surfaces of the component particles of sand; while others say, in addition, that there must be a certain proportion between the quartz and feldspar grains. There are several other theories, but the evidence seems to best agree with the last.

Prof. Julien considers that the conditions of sonorousness in sands are: perfect dryness, uniformity of grain, ranging from one fifth to one tenth of an inch in diameter, and freedom from dust. He thinks that any sand satisfying these conditions may be musical. Exception might be taken to the last statement.

Sonorous sands are now known to be widely distributed throughout the world. They have been found on the coast of Scotland and the Hebrides; on the coast of California, in Nevada, and on the northwest shore of Lake Champlain; along the shores of the Caribbean Sea, where, in some places, it is said to be as loud as the barking of a dog, and in several places in Asia. The phenomenon is, therefore, widely extended.

W. R. I.

#### A Shrewd Device.

AFTER the power of Prussia had been so thoroughly broken by the first Napoleon in the battles of Jena and Auerstadt, the Prussians set secretly to work to retrieve their misfortune. As a means toward this end a secret society, known as the Tugendbund, was formed, whose members were chiefly professors and students of the universities. As the people of the country had been disarmed by their conquerors, one duty of the society was to secretly supply them with arms and ammunition. These had to be smuggled in from England and other friendly countries, and, since the French troops, who garrisoned the towns, kept a strict surveillance over them, it was necessary to employ many shrewd devices to prevent discovery.

In the midst of a forest near the little village of Waldheim, and far from the highway, stood a large, lonely building, long since deserted by all except the owls and bats which had taken their abode there, and half fallen into ruins from age and lack of repairs. It had originally been built and occupied as a hunting-lodge by an owner of the estate, a part of which the forest was. In late years it had been inhabited only by the forester and his son, and since one morning when they had been found murdered in their beds, nobody had lived there. Its lonely location and desolate appearance kept people from visiting the place, and it is not strange that it soon won the reputation of being haunted; at least, that was the current belief among the good people of Waldheim. Nevertheless, they had no absolute proof of this until one day when one Heinz Berger, an idle and

worthless fellow of the village, who was suspected of being a poacher between the intervals of his drunken spells, confirmed the belief by an account of his own experience there.

His story was, that on the evening in question he happened to be passing the house on his way home from Grenwitz, a neighboring village, whistling to keep up his courage, when he noticed a glimmer of light through the cracks in the shutters before the cellar windows. Much startled by this appearance, all the ghostly rumors about the place passed through his head in an instant, and his first impulse was to make his way from the place as soon as possible, but his curiosity overcoming his fears and his discretion, he cautiously approached the window and looked through a crack in the shutter. He had not looked long, however, before he started off at full speed for the village, and did not slack up for a moment until safe at the village inn, where his sudden and precipatory appearance and pale face caused great commotion among the company assembled there. After his fear had been allayed by the presence of so many friends, and he had recovered breath, lost in so long a run, he told his story.

When he had peered through the shutters, he said, he had looked into a long, low room, which must have extended out beyond the house, and underground, for the window was at a corner of the house, and opened into the upper end of the room. He could only just see one corner of the further end of the room, but there he plainly beheld two black coffins, standing on end, before each of which a candle was burning. On the fronts were inscribed some white letters, which he could not read. Greatly amazed at this sight he now, without making any noise, changed his position so that he could look into the upper end of the cellar. There, at a table on which two candles were burning, was seated a man with long white hair and beard, apparently reading some papers, though, as his back was turned, Berger was not quite sure what he was doing. Forgetting himself for the moment, Berger slipped and struck the shutter, causing it to rattle violently. The man at the table

hastily jumped up, while another man, whom he had not seen before, came hurrying from the other end of the room, a pistol in hand. Berger stopped to look no longer, but made for the village with his best speed.

When he had finished his story no one said a word, from sheer amazement. Miller Schmidt was the first to break the silence.

"How came you to be passing there, anyway, at this time of night? That is not the nearest way from Grenwitz."

Berger, in no condition to lie now, told the truth, and said that he had been hunting in the forest, and had dropped his gun on his flight.

"Do you think they were ghosts?" asked another.

"Pooh! who ever heard of ghosts having pistols, and reading papers, and having to have candle-light to see by!" retorted farmer Kuhn, who was well versed in ghost lore.

"I don't believe the story is true, at all," said young Berkau, "for I went all over the old place last year, and there is no such room in the cellar as the one he speaks about. For my part, I think Berger must have been frightened at one of his own drunken dreams."

"That may be so," replied Schmidt; "but he tells his story plainly enough, and he ought to know what he himself has seen, and he looks sober enough now."

So they discussed the matter further, without arriving at any satisfactory explanation of the story. When, however, at a late hour, they were about to depart for their homes, the bailiff, Sommer, the magistrate of the village, a shrewd man, whose advice was much respected by all the townfolk, addressed them:—

"My friends," he said, "this may be an important matter, and I am sure that it will be for the best that you say nothing about it; therefore I wish you to promise me to keep it to yourselves."

All promised, and then went their ways to their respective homes. But Sommer, when he had reached his house, instead of stopping there, continued on to the deserted lodge in the forest.

The next day Berger's mysterious tale was the gossip of the village; for in the morning, farmer Kuhn, who had been honestly trying to keep his promise, finally gave up the contest, and told the story to his wife, and Frau Kuhn had naturally told it to her dearest friend—and after that it was an open secret.

Now, it chanced that on this same day, a party of French soldiers, under the command of a lieutenant, who were on their way to join their regiment in a neighboring town, passed through the village. Stopping at the tavern for refreshment, the story of the event of the night before of course reached the ears of the officer. When he had finished his dinner he called for his orderly, and sent him to find Berger, which was soon done, since the latter, as usual, was then at the tavern. Having presented himself, he was directed to show the way to the forester's house; and, notwithstanding his objections, the lieutenant, sergeant, and two other soldiers soon after proceeded thither, under his guidance.

"Now show me the window into which you looked," said the lieutenant, after they had arrived at the house.

"I can't do it, your honor," answered Berger; "when I was here last night, I was so frightened that I did not notice which one it was. It was on this side, though."

The party entered the house with no trouble, since the door had long ago been torn from its hinges, and looked about. It was not safe to walk around very recklessly, on account of the holes in the rotten planks, which were the remains of the floor, and the débris with which they were covered. At length a hatchway was found which led to the cellar. All looked dark and indistinguishable below, but candles having been lighted, Berger, in spite of his reluctance, was made to go down first, and the others followed. Search showed nothing suspicious here, and at the corners of house on the side which Berger had approached the night before, only two small rooms were found, and no such apartment as the one he had described. These rooms, unlike the rest of those in the cel-

lar, were paneled, but this fact attracted no special attention. Just as they were about to leave, however, one of the men accidentally stubbed his foot against the paneling. It gave forth a hollow sound. The partition was quickly torn away, and the party found themselves in a long vault, at the end of which was dimly seen a double row of black coffins. One of them was pushed over by the sergeant, and fell on the floor with a metallic rattle.

"These are the ones," said the lieutenant; and bursting open the coffin, it was found to be filled with muskets. The others had the same contents.

By this device the muskets had been gradually smuggled from foreign countries by the Tugendbund, and transported hither, to be stored until the time for their distribution should come. Herr Sommer, who was a member of the Tugendbund, and who knew of the secret cellar at the deserted house, had proposed that as a hiding-place. Members of the society had been at the house on the previous night, when seen by Berger, preparing to receive a fresh lot of arms. Warned of their danger by Sommer, they had replaced the paneling between the two cellars, and fled, and not having time to remove the guns, had left them, trusting to the hiding-place for their safety. It seemed that the French commander of the district had heard of the scheme, and detailed the lieutenant to investigate. The latter was just returning from an unsuccessful search, when he blundered into the secret in this manner.

A. R.

### "Seniors' Evening."

AN event, which took place on the first day of last June, the evening before graduation day, under the title of "Seniors' Evening," was, we venture to prophesy, a good beginning, which will lead to repetitions improving without ending. At the first attempt, and a very successful one, to take something more than a formal parting of our honored *Alma Mater*, it will perpetuate the memory of the class of '85 long after their proud (?) distinction as "the last class

that gave a Freshman ball" shall have faded into oblivion. The Institute has long needed something corresponding to "Class Day" at other colleges—something that should throw a mantle of festive forgetfulness and good-fellowship over the toils and tribulations of the last four years, and from the good start already made, we trust will grow the great event of the year—a celebration as comprehensive and attractive as the exactions of fourth-year work will permit.

The programme of the affair was a work of art by itself. The front contained a representation of sundry cherubs in student caps, throwing up the latter for joy at their emancipation, and piling up their ponderous books around a life-like sketch of the class tree, to which one of the number was nailing the figures "'85." One of the aforesaid books contained on its back the word "Homer," which we hope did not delude the many guests of the class into the impression that the study of that classic author was pursued at the Institute, as the "title" was simply the name of the talented designer of the programme—Mr. E. B. Homer. The front also contained a fine picture of Rogers building, with Kidder in the background. The back depicted the class prophet, historian, and poet following the musician and standard-bearer in solemn file. The whole was gotten up in the choicest style of engraving, and contained, beside a full list of the members of the class association, of its committee and officers, the following programme:—

OVERTURE . . . . .	Quintette.
SONG . . . . .	Glee Club.
HISTORY . . . . .	F. H. Newell.
ZITHER SOLO . . . . .	R. E. Richardson.
POEM . . . . .	C. S. Robinson.
SONG . . . . .	H. J. Williams.
FLUTE SOLO . . . . .	E. B. Homer.
PROPHECY . . . . .	R. H. Peirce.
SONG . . . . .	Glee Club.

With the exception of the Glee Club and the first violin of the quintette,—Mr. E. R. Pearson, '87,—all the performers rose from the ranks of the class, and every number was well given, the majority of the musical selections

being encored, and the readings provoking violent applause from the initiated. Mr. Robinson feeling unable to read his poem, it was delivered by Mr. Fry, the late editor-in-chief of THE TECH. Huntington Hall was crowded with the guests of the graduates, and all seemed well pleased with the entertainment, whose unqualified success was largely due to the committee, Messrs. Chas R. Richards, Eleazer B. Homer, Thos. W. Fry, Morris L. Greeley, and Sidney Williams.

### Foot-Ball.

THE new Foot-ball Association of the Institute has been organized as follows: President, P. R. Fletcher, '87; Secretary and Treasurer, Henry D. Sears, '87; Manager of Team, W. L. Dearborn, '88; Executive Committee, P. R. Fletcher (chairman), J. M. Smith, jr., '86, S. W. Bowles, '87; W. L. Dearborn, '88; Morgan, '89.

The following men have been selected to constitute the team: Rushers, Vorce, Ladd, Fletcher, Cooley, Twombly, Bowles, Taintor. Half-backs, Holden and Moulton. Quarter-back, Herrick. Full-back, Sturges.

The eleven has elected M. W. Cooley, Captain. Mr. John L. Shortall, '87, has been acting as "coach," and his services have been of great value to the team.

NORTHERN INTER-COLLEGIATE FOOT-BALL ASSOCIATION. — Delegates from Amherst, Williams and Tufts Colleges, and the Massachusetts Institute of Technology, met at Springfield, Friday, Oct. 16th, and formed a new foot-ball league, to be known as the "Northern Inter-Collegiate Foot-ball Association." Amherst was represented by Mr. Lansing and Mr. Whiting; Tufts by Mr. Wellington and Mr. White; Williams, by Mr. Tyng; the M. I. T. by Mr. Bowles and Mr. Fletcher. Dartmouth did not send delegates, having withdrawn from the association.

A constitution was drawn up, and the following officers chosen: President, P. R. Fletcher, Mass. Inst Tech.; Vice-Pres., W. F. Whiting, Amherst; Secretary, S. H. Tyng, Williams; Treasurer, N. A. White, Tufts.

Application for admission to the Association was made by delegates representing the State Agricultural College of Amherst, but was refused, a unanimous vote being required for admission. A schedule of games was then drawn up, each team to play two games with each other. The schedule is as follows:—

- Oct. 17. Tufts vs. Williams, at Williamstown.
- Oct. 24. Tech. vs. Williams, at Williamstown.
- Oct. 24. Tufts vs. Amherst, at Amherst.
- Oct. 27. Tech. vs. Tufts, at Boston.
- Oct. 31. Williams vs. Amherst, at Williamstown.
- Nov. 6. Williams vs. Tufts, at Boston.
- Nov. 7. Williams vs. Tech., at Boston.
- Nov. 11. Tech. vs. Tufts, at Boston.
- Nov. 13. Amherst vs. Tufts, at Boston.
- Nov. 14. Amherst vs. Tech., at Boston.
- Nov. 17. Amherst vs. Williams, at Amherst.
- Nov. 17. Tech. vs. Tufts, (Exhib.) at Boston.
- Nov. 21. Tech. vs. Amherst, at Amherst.

The following are the changes made in the playing rules, as revised by W. Camp:—

Add to rule IV. A touch in goal shall be a touch-down.

Omit rule XVI.

Change rule XVIII. to "For each intentional delay of game, or off-side play by any player, his side shall lose five yards, and ball shall be given to opponents."

Strike out in rule XVIII. the phrase, "No delay arising from any cause whatever shall delay the game more than five minutes."

Strike out in rule XXI. "within five minutes."

In referee's duty, page 17, strike out "intentional off-side play." On page 17, strike out "intentional delay of game after warning."

Omit rules 15, 16, and 21, in "Interpretation of Rules."

The delegates were very harmonious and enthusiastic, and reported that the several associations from which they were sent were of the same mind. As the teams are very evenly matched, an interesting and exciting struggle may be expected.

The first championship game was played at Williamstown, on Saturday last, between Tufts and Williams, and was won by the latter. Score, 49 to 0.

### Noticeable Articles.

THE numbers of *The Chemical News*, from July 31st to August 28th, contain a full account of the methods employed in Koch's Laboratory, in Berlin, for the biological examination of water. This method of examination is now coming into use along with the chemical examination. W. R. N

A REPORT has just been issued on a visit to the Museums of America and Canada, by V. Ball, M.A., F.R.S., Director of the Science and Art Museum, Dublin. Prof. Ball visited a large number of institutions in North America, and *Nature* (August 20th), in reviewing the report, devotes nearly a page to "the well-known Massachusetts Institute of Technology," and quotes Prof. Ball as speaking of the School of Industrial Science as "the most important branch of the Institution, which has excited the admiration of so many visitors." The School of Mechanic Arts and the Lowell School of Design come in for a fair share of space in the notice in *Nature* and in Prof. Ball's report.

THE vacation magazines have been full of interesting papers. I have time, in season for this number of the TECH, to notice only a few. The student of literature will be amused and interested to compare the different estimates of the great French writer Victor Hugo, as they appear in papers in the *Fortnightly* for July, by Henry Céard; in the *Contemporary* for July, by that clever novelist and accomplished lady, Mrs. Oliphant; and in the *Nineteenth Century* for July and August, by the English poet Swinburne, a devoted admirer of the famous Frenchman. In the *Fortnightly* for July is an interesting paper on Lowell, by Mr. Traill, and in the September number another on Emerson, by Mr. Courtney; and in the same number is a paper by Mr. Elcott, on the late Lord Houghton, better known to older readers as the poet Monckton Milnes.

Students of science will read with interest the short paper by Prof. Sidney Colvin, on the late Prof. Fleming Jenkin, the eminent electrical engineer, in the *Fortnightly* for July; and in the number for August, the paper on the Life and Labors of Pasteur, the great physicist, by Mrs. Lynn Linton.

In the *Nineteenth Century* for July is a paper by Prof. Ray Lankester on the recent progress of Biology.

Students of geography and politics will read with interest a rather surprising paper in the September *Fortnightly* on Industrial and Commercial Spain,

which gives a very hopeful account of a country which is usually considered as in a hopeless condition of decline. In the same number is a paper on a country which is fast becoming the favorite haunt of tourists, the Norway of to-day.

In the *Contemporary* for July, Prof. Goldwin Smith discusses the Administration of Ireland, and in the number for August, Mr. Bennett contrasts Mr. Herbert Spencer, Mr. Frederick Harrison, and Mr. Matthew Arnold. In the same number is a capital article, to be read by all students of history, entitled, "What History can Teach Us," by Mr. W. S. Lilley.

One of the most interesting papers is in the *Nineteenth Century* for August, entitled "The Metaphysical Society: a Reminiscence." The Metaphysical Society was a club which existed for several years in London, composed of the most eminent and intellectual men in England, of all professions and shades of opinion, who met for the purpose of discussing philosophical and theological subjects. It is certainly a wonderful illustration of the progress of toleration, that such a society could so much as exist; for here there used to meet the Roman Catholic Archbishop Manning, Father Dalgairas, and Dr. Ward; the Church of England Archbishop of York, and Dean Stanley; the Unitarian, Dr. Martineau; the Positivist, Frederick Harrison; Tennyson, the poet; Huxley, Tyndall, and Sir John Lubbock, the men of science; Froude, the historian; Gladstone, the statesman; Sylvester, the mathematician; Ruskin, the artist. I have mentioned only a few of the fifty-nine eminent names enumerated in the article, where also is a list of the subjects described, and an example of one of their discussions. Perhaps a more brilliant assemblage of intellectual men never met together. What would one not have given for the privilege of being present at their meetings?

W. P. A.

### List of Publications, M. I. T.

MASS. INSTITUTE OF TECHNOLOGY. Division of Entrance Examinations, 3 pp.; Optional Five Years' Course, 3 pp.; Lowell School of Practical Design, 4 pp. Three circulars, 8vo. 1885.

SOCIETY OF ARTS. Abstract of the Proceedings of the Society of Arts for the 23d year, 1884-85. Pph., 8vo, pp. 162. Boston, 1885.

BLODGETT, G. W. ('73). Recent Improvements in Electric and Interlocking Railway Signals. *Proc. Soc. Arts, M. I. T.*, 1884-85, 62-67.

ALUMNI ASSOCIATION. Constitution, List of Officers, etc. Pph. 8vo, pp. 8. Boston, 1885.

CLASS OF '77. Class Directory, July, 1885. Pph., 8vo, pp. 25.

CLASS OF '81. Class Directory, 1885. Pph., 12mo, pp. 8.

ALLEN, C. R. ('85). See *Nichols, W. R.*

AUSTIN, AMORY ('73). Manganese. *Oil, Paint, and Drug Reporter*, XXVII., 8 (June 3, 1885).

——— The Boynton Train Indicator. *Id.*, 1884-85, 122.

CLARK, T. M. (Prof.). Recent Improvements in Building. *Proc. Soc. Arts, M. I. T.*, 1884-85, 5-11.

CROSS, CHAS. R. ('70). Report to Boston Tariff Association on System of Martin Automatic Fire Alarm Co. Oct. 20, 1884. Circular, pp. 2.

——— Some new apparatus for studying Telephone Currents. *Proc. Soc. Arts, M. I. T.*, 1884-85, 120.

——— A School for Electrical Engineering in Boston. *Science*, VI. (1885), 150.

——— Electric Measuring Apparatus. Note. *Science*, VI. (1885), 283.

FULLER, FRANK L. ('71). The Wellesley [Mass.] Water Works. *Fourn. Assoc. Eng. Societies*, IV. (1885), 401-412.

HOLMAN, S. W. ('76). On the Effect of Temperature on the Viscosity of Gases. *Proc. Am. Acad.*, XXI. (1885), 1-44. Also printed separately.

——— On the Friction of Leather Belts on Iron Pulleys. *Fourn. Frank Inst.*, Sept., 1885.

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LANZA, GAETANO (Prof.). Applied Mechanics and Resistance of Materials. 700 illustrations, 8vo. John Wiley & Sons New York, 1885.

LYLE, CAPT. D. A., U. S. A. ('84). Casting Heavy Guns at South Boston. *Proc. Soc. Arts, M. I. T.*, 1884-85, 88-94.

MINOT, CHAS. SEDGWICK ('72). The Effect of Cold on Living Organisms. *Science*, V. (1885), 522.

——— The Formative Force of Organisms. *Id.*, VI. (1885), 4-6.

——— Color Associations with Months. Note. *Id.*, VI. (1885), 82.

——— Has Man a Tail? *Id.*, VI. (1885), 92.

——— A New Endowment for Research *Id.*, VI. (1885), 144; *Nature*, XXXII. (1885), 297.

NICHOLS, W. R. ('69). Chemistry in the Service of Public Health. Abstract of an Address before the Section of Chemistry of the American Association, Ann Arbor, August, 1885. *Science*, VI. (1885), 208. Also, a shorter abstract in *The Sanitary Engineer*, XII. (1885), 287. [September 10th.]

——— with C. R. Allen ('85). Contributions to our Knowledge of Sewage. *Fourn. Frank Inst.*, August, 1885.

——— with P. D. Borden, Jr. On a Case of the Rapid Exterior Corrosion of an Iron Water-Main. *Fourn. Assoc. Eng. Societies*, IV. (1885), 274-284.

NILES, W. H. (Prof.). Report of the Permanent Meteorological Committee. *Proc. Soc. Arts, M. I. T.*, 1884-85, 137.

NORTON, L. M. (Prof.). Coal Tar, and the Colors Derived from it. *Proc. Soc. Arts, M. I. T.*, 1884-85, 29-33.

——— Minor [Chemical] Investigations. *Am. Chem. Fourn.*, VII. (1885), 114-120.

PICKERNELL, F. A. ('85). The Electric Railway in New York. *Science*, VI. (1885), 148-150; *Electrician and Electrical Engineer*. IV. 325 (Sept., 1885); *Telegraph Journal and Electrical Review*, XVII. 228. (Sept., 1885).

PICKERING, W. H. ('79). An attempt to photograph the Solar Corona without an Eclipse. *Science*, VI. (1885), 131-133.

——— A method for determining the Unit of Light. *Id.*, VI. (1885), 183.

——— The Color of the Sky. Note. *Science*, VI. (1885), 316.

——— Method of determining the Speed of Photographic Exposers. *Proc. Amer. Acad.*, XX. (1885), 478-482.

——— Principles involved in the Construction of Photographic Exposers. *Id.*, XX. (1885), 483-489. 2 plates



## WHAT '85 ARE DOING.

DAVID BAKER, Pennsylvania Steel Co., Steelton, Dauphin County, Pa.

EDWARD R. BENTON, draftsman, with H. H. Richardson, architect, Brookline, Mass.

HEYWOOD COCHRAN, draftsman, with Louisville Bridge and Iron Co.

EDWARD H. DEWSON, JR., in Boston and Albany R. R. Shops, Boston, Mass.

FREDERICK FOX, JR., Post-graduate student, Mass. Inst. Tech.

THOMAS W. FRY, in shops of M. C. Bullock Manufacturing Co., Chicago, Ill.

WALTER K. HARRINGTON, with Norman Water Works Co., Horsick, N. Y.

ELEAZER B. HOMER, with Hartwell & Richardson, architects, 68 Devonshire Street, Boston, Mass.

FRANK H. LORD, assistant in first-year drawing and mathematics, Mass. Inst. Tech.

HENRY MARTIN, assistant in analytical laboratory, Mass. Inst. Tech.

ALLYNE L. MERRILL, assistant in Department of Mechanical Engineering, Mass. Inst. Tech.

EBEN G. MERRILL, in employ of H. W. Ellis & Co., hydraulic engineers, Laconia, N. H.

EVERETT MORSS, with Morss & Whyte, wire works, 75 Cornhill, Boston, Mass.

FREDERICK H. NEWELL, Ohio Geological Survey of Oil Fields, Macksburg, Ohio.

JOSEPH E. NUTE, with United Gas Improvement Co., Philadelphia, Pa.

MARCELLA I. O'GRADY, science teacher in Bryn Mawr School, Baltimore, Md.

FRANK A. PICKERNELL, assistant in department of mechanical engineering, Mass. Inst. Tech.

RICHARD H. PIERCE, with Edison Electric Light Co., Brockton, Mass.

NEWBERT M. RANDALL, assistant in mining laboratory, Mass. Inst. Tech.

CHARLES R. RICHARDS, with Whittier Machine Co., Boston, Mass.

C. STANLEY ROBINSON, assistant engineer, Hancock and Calumet R. R., Opechee, Mich.

OTIS T. STANTIAL, private assistant to Prof. R. H. Richards, Mass. Inst. Tech.

HENRY P. TALBOT, assistant in analytical laboratory, Mass. Inst. Tech.

GEO. P. VANIER, Pennsylvania Steel Co., Steelton, Pa.

ERASTUS WORTHINGTON, JR., assistant engineer of Middleboro Water Works.

MORRIS L. GREELEY, teacher in mathematics, in Chicago, Ill.

CHARLES F. SPRING, traveling for Walter Bros. Drain Pipe Co., 68 Water Street, Boston, Mass.

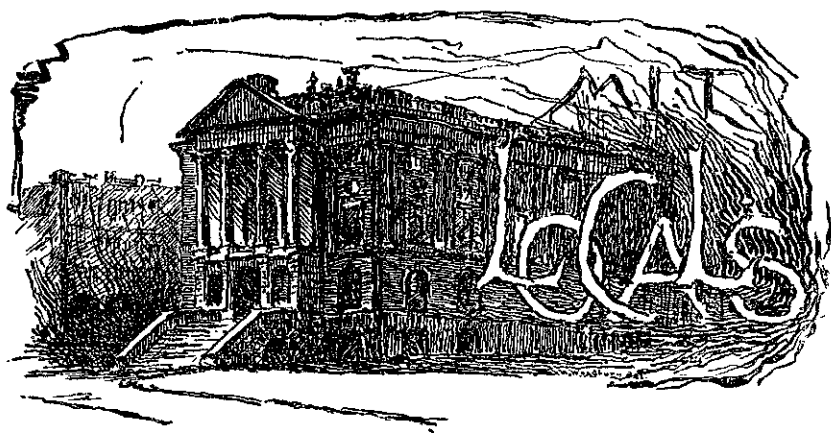
WILLIAM J. HOPKINS, in a bank, New Bedford, Mass.

JULIAN O. ELLINGER, Sprague Electric Motor Co., 65 Fifth Avenue, N. Y.

HUGH MACRAE, Wilmington, N. C.

TRACY LYON, Oswego, N. Y.

On Thursday evening, October 22d, there will be a reception to the faculties and students of the Institute of Technology, Harvard Medical College, and Boston University, at the building of the Boston Young Men's Christian Association, corner of Boylston and Berkeley Streets, at 7.30 P. M.



The 2 G had its first meeting of the year at Young's Hotel, Wednesday, Oct. 7th.

The Lowell course of scientific lectures will begin during November.

C. H. Atkinson, Harvard, '85, is studying mechanical engineering at the Institute, this year.

W. B. Douglas, formerly Mass. Inst. Tech. '87, is playing quarter-back on the Wesleyan foot-ball eleven.

The first meeting of the year of the Hammer and Tongs Society was held at Young's, Saturday evening, Oct. 17th.

It is said that a large number of '87 men witnessed the eclipse of the moon on the night before the condition examination in physics.

A Freshman recently asked at the supply-room in the chemical laboratory for a piece of "solid glass tube," with which to make a stirring-rod.

Much new machinery, including two new jigs, a new frue-vanner, and a three-stamp battery, has recently been added to the mining laboratory.

Mr. Geo. W. Blodgett, the electrician of the Boston & Albany Railway, is to give a course of lectures on the application of electricity to railway signals, before the fourth year electrical engineers.

The fourth year mechanical engineers have been classified into three divisions: They are mill engineering, locomotive engineering, and marine engineering. Students choose between one of these courses.

Prof. Sedgwick read a paper on the comparative merits of water gas and coal gas for illuminating purposes, before the Society of Arts, at its first meeting, this year.

President Walker is to deliver a course of lectures on finance, this fall, open to all members of the Senior class, who have taken the political economy of the third year.

The papyrograph notes on mechanical engineering, revised and extended, have been printed. A printed pamphlet on electrical measurements will soon be published.

A bicycle club has been formed at the Institute. Its membership is already large, and is increasing. Two very successful runs have been held, and more are to follow. The club has accepted the invitation of the Massachusetts club to participate in their lantern parade of the 22d inst.

Prof. T. M. Drown, the eminent authority on iron and steel analyses, and formerly professor of chemistry at Lafayette, has succeeded Prof. Wing as director of the laboratory of analytical chemistry. Prof. Joseph J. Skinner, formerly instructor of mathematics at Yale, has been appointed professor of first-year mathematics.

The fourth-year miners have begun work in the mining laboratory upon the following subjects: Anthony, Ontario silver ore; Burlingham, Vershire copper ore; Chadbourn, jeweler's sweeps; Ingalls, argentiferous zinc blende; Lynde, concentration of silver ore; Wilson, gold chlorination; Young, Calumet coarse sand; Simpson, smelting galena. Simpson had a very successful agglomeration run, of fourteen hours' duration, on Thursday, October 8th.

The Athletic Club will hold an out-door meeting on Saturday, Oct 31st. Special medals will be given to all who break Mass. Inst. Tech records. The events will be: 100 yards dash; 220 yards dash; quarter-mile run; one mile run; one mile walk; two mile bicycle race; running and standing broad jump; putting the shot; and a tug-of-war between '88 and '89, ten men on each side, and without cleats.

The Freshmen held their first class meeting last week, in room 15, Rogers. It having been rumored that the Sophomores were to attend the meeting and attempt to break it up, the Freshmen secured a list of the members of their class from the secretary, and stationed a stalwart sergeant-at-arms at the door, armed with the check list. The big men of the class were appointed a committee to assist the sergeant-at-arms. About fifty Sophomores put into appearance, but as the Freshmen numbered two hundred, it was, perhaps, fortunate for the former that they did not succeed in entering the room. Score one for the Freshmen.

The total number of students at the Institute, this year, is 720, divided as follows:—

SCHOOL OF INDUSTRIAL SCIENCE:—

	REGULARS.	SPECIALS.	TOTALS.
Fourth Year . . .	48	24	72
Third Year . . .	63	53	116
Second Year . . .	108	80	188
First Year . . .	192	35	227
	<u>411</u>	<u>192</u>	<u>603</u>
SCHOOL OF MECHANIC ARTS . . . . .			57
LOWELL SCHOOL OF DESIGN . . . . .			60
Total . . . . .			<u>720</u>

The great decrease in the size of the Freshman class, from that of last year, is due to the fact of the standard of admission having been raised. The number of applicants was greater, this year, than last.

*Technique*, the new Institute annual, to be published by the Junior class, will probably appear in December, before the Holidays. It is to be profusely illustrated, and is to contain a fund of information about the Institute, which cannot fail to be of interest to both alumni and undergraduates. The price will be fifty cents. The editors offer a prize of five dollars for the most satisfactory design for a cover, competition being open to all students of the Institute. The editors of *Technique* are: F. P. Gulliver, editor-in-chief, Quintard Peters, T. W. Sprague, Guy Kirkham, F. M. Wakefield, W. J. Barnes, and Solomon Sturges. Business manager, H. C. Spaulding.

THE COLLEGE WORLD.

HARVARD.—Seven hundred and forty members take their meals at Memorial Hall, which is taxed to its utmost capacity. There also seems to be a lack of dormitory room at the college this year. The "Annex" has lately moved into new and more commodious quarters.—Prof. Agassiz has been offered the position of Superintendent of the Coast Survey, but has declined.—A Chair of Journalism has been recently established at Harvard, and is to be filled by J. B. McCollogh, editor of the St. Louis *Globe-Democrat*.—James Russell Lowell has resumed his connections with the college this year, having charge of courses in Spanish and Italian.—The recent destructive "rush" made by the Sophomores upon the Freshmen, resulting in the breaking of chairs and settees and lasting for nearly an hour, seems to show that the custom of "rushing" at Harvard has not become quite extinct.

YALE.—A young woman has entered the Senior class of the Yale Law School. She is the first woman to enter any of the departments other than the Art School. A course in electrical engineering has been inaugurated this year in the Sheffield Scientific School.—The Freshman class numbers 134.—President Porter, who is revising Webster's Dictionary, has already made considerable progress upon the work.—At the regular fall races last Wednesday, the eight-oared two miles straightaway, between the Juniors and Sophomores, was won by the former.

IN GENERAL.—Sophomores both at Brown and at Dartmouth have voted to allow the Freshmen to carry canes.—Dartmouth is to have a new paper, known as *The Stylus*, a monthly, whose first number will appear next month.—Johns Hopkins is having a new physical laboratory and observatory built, at an expense of \$100,000.—Among the great Americans, who have expended their youthful talent in editing college papers, are the poets, Holmes and Willis; the statesmen, Everett and Evarts;

and the eloquent divine, Phillips Brooks. *Ex.* — Williams comes to the front this year in the matter of hazing, seven sophomores having been suspended for indulging in that historic pastime. — Hereafter, at Amherst, no degrees will be conferred on students who have not attended their gymnasium duties regularly. — The Freshman classes at various colleges number as follows: Princeton, 102; Cornell, 125; Amherst, 98; Dartmouth, 76; Bowdoin, 40. — Bowdoin is to have a new gymnasium. — The University of Heidelberg will celebrate its 500th anniversary next August. — Italy, Switzerland, Norway, Sweden, and Denmark have all thrown open their universities to women. — In the German and Austro-Hungarian Universities there are 2,043 professors and 25,964 students. — The largest European university is Rudol-Albrecht's of Vienna. It has 5,221 students and 285 professors. — Amherst Sophomores have passed resolutions discountenancing tug-of-war contests, on the ground of the physical injury done the men. *Crimson.* — The only Latin magazine in the country is edited by Prof. Shumway, of Rutgers College. — Thomas A. Edison, the inventor, has presented to the Department of Mechanical Engineering at Cornell a complete electrical plant for lighting the workshops at Sibley College. — The Trustees of Princeton will meet on Nov. 10th, when it will be decided whether Princeton can play Yale at the polo grounds on Thanksgiving. If permission is not granted, it is expected that the game will take place at either New Haven, Hoboken, or Philadelphia. — A two-hour course in phonography has been started at Yale. — A new chapel, to cost \$250,000, is in process of erection at Lehigh University. — Several Wesleyan Sophomores were guilty of throwing water on some Freshmen. As a result, the President withdrew scholarships to the amount of \$75 each from eight students. Great indignation prevails. — The library of Brown College possesses the only copy in existence of the first edition of the "New England Primer." It is two inches square, and is valued at \$1,200. — Harvard has given up foot-ball.



## HOBSON'S CHOICE.

A thief on his trial refused to be sworn.  
 "Of what use," queried he, "will my evidence be?  
 If I tell the whole truth I shall get the old Nick;  
 If I tell what's not true the old Nick will get me."

— *Century.*

"How do you like Miss Lilliwhite?" asked Brown of Fogg, who had just waltzed with the lady; "don't you admire her conversation?" "Yes," replied Fogg, "she talks well enough; but, between you and me," brushing his whitened coat-sleeve, "she's a little floury." — *Boston Transcript.*

WHAT HE WAS. — "Were you a bull or a bear?" asked an acquaintance of a speculator.

"Neither," he replied, "I was an ass" — *Ex.*

## A TENDER CONSCIENCE.

A doubtful boon, half good, half bad,  
 This rigorous voice within;  
 So heavy is my heart, and sad,  
 To see my neighbors sin.

— *Life.*

*Brown:* "Col. Rosebugle, is it true that you formerly kept a saloon?"

*Col. Rosebugle* (indignantly). "No, sir; never, sir. But," added the colonel, thoughtfully, "I have done as much as any private citizen could do to keep two or three of them up." — *Texas Siftings.*

Central Park is to have a colossal bust of Washington Irving, by Frederick Beer, an Austrian artist. It seems to us that beer has been more or less connected with various other colossal busts heretofore. — *Life*

An article in an exchange is headed, "Why a count shot himself." We haven't read the article; but suppose it was because his monkey died, or some one stole his organ — *Norristown Herald.*



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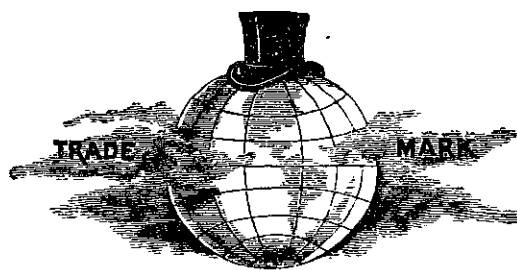
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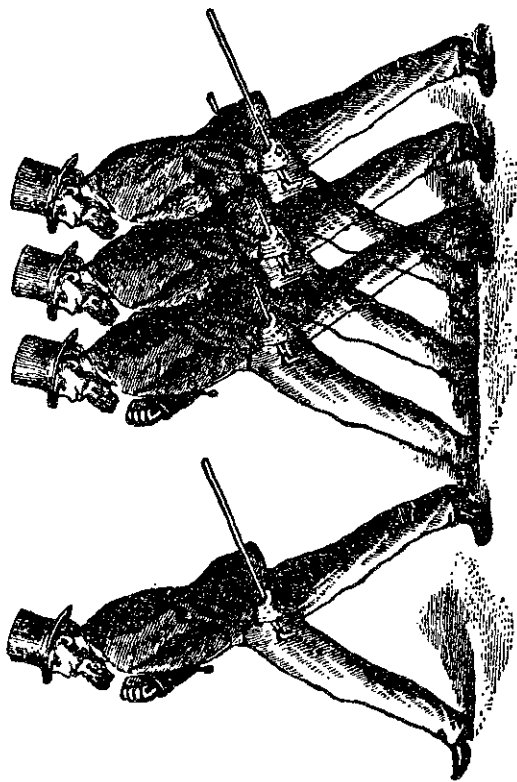
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Mlle. RHEA plays an engagement at the Boston Theatre this present week only. Her list includes an admirable number of plays in high comedy.

"WHAT OUGHT WE TO WEAR?" is a pamphlet issued this fall for the benefit of Technology students, by S. Grant Smith. We commend the book to the attention of those wishing information in this line.

**Mr. J. F. HARRIS**

announces that he has opened the

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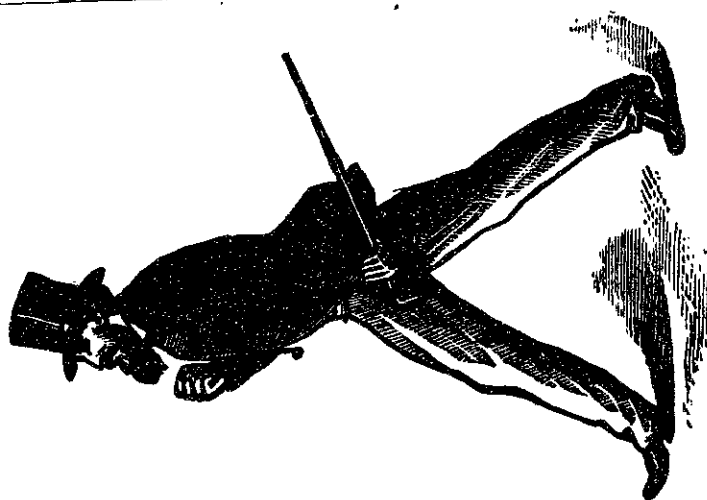
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