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ROSE POLYTECHNIC INSTITUTE



Chauncey Rose

98
ROSE POLYTECHNIC INSTITUTE
MEMORIAL VOLUME

EMBRACING

A HISTORY OF THE INSTITUTE
A SKETCH OF THE FOUNDER

TOGETHER WITH

A BIOGRAPHICAL DICTIONARY

AND OTHER MATTERS OF INTEREST

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TO THE ALUMNI
OF ROSE
THIS VOLUME IS DEDICATED

PREFACE.

The preparation of this volume was undertaken with the view of presenting a brief sketch of the work and the activities of Rose Polytechnic Institute and the results attained during the first quarter century of its operation. In gathering the material for it, a number of documents pertaining especially to its early history appeared to be of such interest that to incorporate them in the publication seemed desirable. The Historical Notes by S. S. Early, the Inaugural Address by President Thompson, and the Will of Chauncey Rose are among these. They present such a view of Mr. Rose's intention, of the early history of the Institute, and of the original plan of organization, that in the light of the more recent history it can be easily judged whether the institution has fulfilled early expectations.

Biographical sketches of members of the Board and Faculty have been limited to those who have served, but are no longer living or in service. Much of the historical matter has been compiled by Mr. W. C. Ball, who carefully searched voluminous original records to gather material, and to him especially our thanks are due.

The preparation of the biographical dictionary of Alumni presented difficulties; as many who were urgently solicited to do so did not furnish data, a large part of the material had to be taken from the Institute records. Errors in dates may therefore appear here and there. It is be-

lieved, however, that in the main the records are accurate and fairly complete.

To give extended biographies would have made the volume too large. The biographical notes were therefore compressed as much as possible. To Mrs. S. P. Burton credit is due for having done a large part of this work.

Prof. J. A. Wickersham critically read much of the material, and Prof. J. B. Peddle, '88, gave counsel and aid in the planning and preparation.

Mr. F. Pote, '06, gathered most of the statistics for the brief history of the Institute organizations. The history of fraternal organizations and Greek letter societies has been very fully recorded in the several volumes of the *Modulus*; as most of the Alumni have these, their history has not been included in this volume.

That this history is incomplete, we know, but trust that it may break the way for future publications more comprehensive and accurate, and may knit more firmly the bond that unites the Alumni and friends of Rose.

C. L. M.

April, 1909.

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THE ROSE POLYTECHNIC INSTITUTE.

A BRIEF HISTORICAL REVIEW

BY WILLIAM C. BALL, 1909.

Chauncey Rose, founder of the school that bears his name, received in boyhood the limited education afforded by a Connecticut village school. Beyond that he was self-taught in the practical school of experience. His business activities here in the Wabash Valley in that early day brought him into daily contact with men engaged in various industries and doing their work under adverse circumstances, for they were all pupils together in the hard school of experience, where the tuition fees are proverbially high.

Mr. Rose's activities were manifold, such as would naturally engage the attention of an aggressive, enterprising, masterful man. What his hands found to do he did with a will. He worked with his helpers. But he was constantly confronted with the fact that his labors were made more difficult by lack of facilities, and especially by lack of training or of adequate training in their special vocations by the men on whom he was forced to rely for assistance. Assistants he secured, as the scope of his work broadened, and they were willing workers, and capable, and many of them trained in their trades; but it was borne in on him constantly that development of his enterprises lagged for lack of men schooled to do their appointed work in the quickest, best, and cheapest way.

Consequently, when he began, late in life, to bestow on the question of helpfully disposing of his property the same prudent forethought he had exercised in its acquisition, it was altogether natural that he should conceive the idea of

founding a school where young men should be taught those things that had cost him and his associates so dearly.

Brooding over this idea for several years, he finally called together a few of his trusted friends and associates for conference. In the historic library and work room of his home, which had been for years the real business heart of the growing town, where scores of enterprises had been considered, these friends met at his request. He told them of his plans and asked them to coöperate with him in their formulation. All of them were younger men, and he desired to form them into a body corporate, which should be self-perpetuating, for the organization and establishment and maintenance of a school for the teaching of the industrial sciences, so called.

Repeated conferences were held, for the idea was novel. How new it all was people of the present generation will find it hard to realize. In the early seventies of the nineteenth century, education, as it now exists, was almost unknown. Schools and colleges abounded, but they were schools of letters. Language, modern and ancient history, philosophy, and many other branches, including mathematics, and in a theoretical way entirely, the sciences were taught. But of schools where the industrial sciences should be taught, theoretically and practically, heads and hands educated together, there were only a few. And these were new, altogether in an experimental stage, and had as yet far from demonstrated their practicability. So it was essentially a voyage of exploration to which Mr. Rose invited his friends. The course is fully charted now, and very largely by the Rose Polytechnic Institute.

On the 10th of September, 1874, articles of incorporation were adopted for the establishment of "an institution for the intellectual and practical education of young men," to be known as the "Terre Haute School of Industrial Science," and to be administered by a board of managers. On October 10th the board organized with Chauncey Rose,

President; Demas Deming, Treasurer, and William K. Edwards, Secretary. January 11th, 1875, the cornerstone of the main edifice was laid with appropriate ceremony, and the name of the school was changed by the managers, over the protest of Mr. Rose, to "The Rose Polytechnic Institute." June 13th he resigned the presidency on account of age and infirmities, and died the next August.

His bequests to the school include the grounds, the main building, the shop building, sums for equipment and maintenance, and a productive capital of about five hundred thousand dollars. His will made the Institute residuary legatee of his estate. Since that time a bequest has been received from the will of Josephus Collett, who was Mr. Rose's successor as President, of \$50,000. Many gifts of valuable machinery, apparatus, and books have been added to the equipment of the shops, laboratories, and library.

The Institute of to-day consists of one large three-story academic building with a basement story, for offices, recitation rooms, library, laboratories, models, cabinets, museum, etc.; a two-story shop building for practice in wood and metals, including a smithy and foundry, besides power and lighting and heating plants; chemical laboratory with office, store room and recitation room; gymnasium with locker room, rubbing rooms, and shower baths.

Rose Polytechnic was formally opened for instruction March 7, 1883, at which time President Charles O. Thompson, formerly principal of the Free Institute of Technology of Worcester, Massachusetts, made the inaugural address.

President Thompson's experience at Worcester was supplemented by a tour of observation abroad, where he went expressly to study European schools of technology. He embodied the results of his experience and tour in the plan of instruction that he formulated for the new school, and which is substantially followed at present. Unfortunately, President Thompson lived only long enough to see his work begun. July, 1886, Dr. T. C. Mendenhall was elected his

successor, and served until 1890, when he took charge of the United States Coast and Geodetic Survey. Dr. H. T. Eddy filled the presidency for three years, 1891-4, when Dr. C. L. Mees, the present incumbent, was elected.

The Polytechnic is purely a school of technology. Its courses include instruction in mechanical, civil, and electrical engineering, architecture, and chemistry. Coincident with this instruction is included actual shop and field work, such as a commercial graduate may be engaged in, although no aim is made at proficiency; but at the end of his course the student should be as well equipped as the journeyman at the conclusion of his term as apprentice. Shop work as given at Rose provides enough variation from theoretical study so as to keep the student's feet in contact with the earth.

One of the gratifying proofs of the Institute's training is to be found in the fact that the graduates are in demand and at work all over the country, yes, the world, and in even wider lines than their education at Rose Polytechnic seemed to fit them.

More students apply for admission than can be accommodated. One million dollars can be wisely expended for buildings and equipment, and the endowment fund must be increased if all deserving applicants are to be received; for the monetary cost of each student to the Institute per year is several times in excess of the really nominal tuition fee.

In this era of magnificent gifts to education it would seem as if persons seeking the safest and largest returns from their benefactions would increase the facilities of an institution already doing such work as Rose Polytechnic rather than to start some new and untried project, and it is hoped that the work of Chauncey Rose will never be allowed to lapse for the want of such endowment.

How well the work of the Institute was planned and how deep and true its foundations were laid is evidenced especially by two things. First of all is the gratifying fact that practically all of the graduates of the Rose, scattered as

they now are all over the world, are engaged in professional pursuits for which their instruction at the Institute specially fitted them. Occasionally one, by force of family reasons or inheritance, has drifted into other pursuits, but the number of them is very small. Rose Alumni are putting into the world's work the skill acquired at the Institute.

Another is that in all these years there has been no occasion to materially change the original plan. Changes have been made, many of them to adapt them to changed conditions. Courses have been rearranged. Old courses have been amplified or modified as circumstances have required. New courses have been added. But the general scope has not been altered. It was started right, and it is right now. No better statement of the original plan has been made than that contained in the address delivered by Dr. Charles O. Thompson, the first President, on the occasion of the inauguration exercises, March 7, 1883. The occasion was a notable one. Distinguished men in all walks of life, and especially educators, were present, drawn by a common desire to do honor to the memory of Chauncey Rose, who died before the school was opened, as it was denied to Moses to enter the promised land. Great and widespread interest, too, was taken because of the novelty of the Institute and the almost revolutionary courses of study it proposed. Notable addresses were delivered by Colonel Richard W. Thompson; General John Eaton, United States Commissioner of Education; Dr. Lemuel Moss, President of the Indiana State University; Dr. Emerson E. White, President of Purdue University, and Dr. Barnabas C. Hobbs.

CLASS MEMORIALS.

One of the most gratifying evolutions in the student life at the Institute has been the complete conversion into constructive channels of the destructive rowdyism that has in the past in most institutions (still does in many) marked and marred certain anniversary occasions, notably Hal-

lowe'en. Such rowdyism has undergone a transformation at Rose. Now the ebullient spirits that formerly celebrated the day by destroying property find better and more lasting expression in creating it. The administration building, the campus, the enclosure, and the gates, each now memorize some class. This is permanent construction, and adds to the attractiveness of the Institute. It serves a useful purpose, contributes to the comfort of the undergraduates and the edification of visitors, and perpetuates the memories of successive classes. It links them, so to speak, with the name of Chauncey Rose, the founder, and enlists them at once into the noble army of future benefactors of the Institute. Keeping up the old traditions of secrecy and darkness, the students now place these useful adjuncts to and adornments of the Institute in position at night and stealthily. Each year these class memorials have taken more elaborate and costly form; they are now substantial additions to the Institute. Marking, as they do, a radical change of attitude of the student body to the school and an entire shifting of the usual viewpoints, they are veritable mileposts in the path of progress. They stand for love and loyalty; represent self-sacrifice; recognize in a beautiful way the benefactions of Mr. Rose by seeking to add to them, and furnish touching testimonials to their realization of the fact that the hand of Mr. Rose, though long turned to pathetic dust, still leads them to and makes possible for them lives of greater usefulness and worth. All this the discriminating eye can see in their class memorials.

ALUMNI ACTIVITIES.

Alumni representation on the Board of Managers has proven of value in bringing to the solution of administrative problems the minds of men who have been trained in the school of experience, and it has brought the whole body of Alumni into closer touch. Tech Clubs scattered all over the country where Rose men are located have also con-

tributed to keep alive the interest in their Alma Mater. Out of all this, and out of the discussions and conferences of Commencement Week there has grown an organized effort on the part of the Alumni Association to raise by persistent work among themselves a substantial fund for the further endowment of the Institute. None knows better than the man who has taken the course the added burden that insufficiency of funds has thrown upon the shoulders of the Faculty. And they have been keenly alive to the fact that many earnest and ambitious young men have knocked vainly at the doors of the Institute because its facilities were taxed to the limit, and, without lowering the standard of instruction and so reducing the quality of the product, no more could be admitted. For it has been the fixed purpose of the school authorities from the first, and the Alumni have been especially insistent on this, that under no circumstances should the standard be lowered. Every change has been to make the course more complete, as well as more comprehensive.

From the first a Rose diploma has been in engineering and industrial circles a recognized certificate of efficiency and attainments. Its graduates have been men who could be depended on by captains of industry, such as could be safely intrusted with positions requiring technical knowledge and thorough training.

For several years past Rose has had its capacity taxed to the limit. On the one hand, it has had a demand for its graduates greater than it could supply. On the other hand, it has been forced by the limitation of its facilities to deny its privileges to worthy and deserving young men. To enlarge the Institute to meet this double demand has been the perplexing problem confronting the Board of Managers and the Faculty, and has been one of the things that have prompted the Alumni to put their shoulders loyally to the wheel and their hands to their pockets. Considering the age of the school, the limited number of its Alumni, and the

youth of the greater portion of them, what they have so far accomplished in this direction is highly gratifying.

Among the notable and admirable phenomena of recent times have been the vast contributions to the cause of education. Men of both large and small means have contributed. It is doubtful if, in the entire list of splendid educational institutions with which the United States is blessed, there is one where further endowments are more needed and where such funds would yield larger returns and afford greater satisfaction to the benefaction in the development of men and the upbuilding of the country than Rose Polytechnic Institute.

CHAUNCEY ROSE,

FOUNDER OF THE ROSE POLYTECHNIC INSTITUTE.

A BIOGRAPHICAL SKETCH AND MEMOIR

From Notes by President Thompson (1888).

Chauncey Rose, founder of the Rose Polytechnic Institute, Terre Haute, Indiana, was born in a retired farm house in the Wethersfield Meadows, in Connecticut, December 24, 1794. He died at his residence, Terre Haute, Indiana, August 13, 1877. John Rose, his father, was the son of John Rose, who emigrated from the Highlands of Scotland early in the eighteenth century. Mary Warner, his mother, was the daughter of John Warner, of Wethersfield. His mother died at the age of seventy-two in 1832, and his father, aged eighty, in 1838. Of such sturdy stock was the subject of this sketch born.

Chauncey Rose was one of eight children, six brothers and one sister, afterward Mrs. Israel Williams. Parental care was necessarily diffused, and the children of the family grew up with greater self-reliance and clearer ideas of the duties of mutual helpfulness than would have otherwise been the case. To the development of these characteristics and all the sturdier qualities of mind, time and place both contributed. The echoes of the War of Independence were reverberating over the land. A national government was in the throes of birth. Domestic problems pressed for solution. A continent whose resources were for the most part unknown united courageous souls to its conquest. His six brothers and his sister (Mrs. Israel Williams) all died before Chauncey, and all were childless. So, when, at the

age of eighty-three, he died, also childless, he was "the last of his race." Two of his brothers, George and John, were successively partners of Stephen Bulkeley, of Hartford, Conn., and carried on an extensive business in the East India trade at Charleston, S. C. Before the dissolution of this partnership, John became a prosperous cotton broker at New Orleans. After George's death, John removed to New York, and made a strong impression in financial circles as one of the ablest business men of his time. When he went to New York from New Orleans his possessions were estimated to be worth \$50,000. At his death his property was valued at \$900,000, a very considerable increase for that period of simpler and slower as well as more substantial development.

Chauncey Rose's education was limited to a brief attendance upon the common schools near his boyhood home. It was rudimentary, but it was thorough as far as it went. Best of all, it inspired him with a respect and yearning for knowledge. Probably then and there was implanted in his receptive mind the germ of a determination to make easier to travel that pathway to knowledge which his feet could not tread — a determination that grew and bore fruit many years later. But though denied those larger opportunities for education for which he yearned, and from which he might have been greatly benefited, he did not repine. His heritage was a rich one, as it was. Endowed with a sound mind in a sound body, he had courage, self-reliance, integrity, industry, and an indomitable will. Just such men as he was, cast in the same sturdy mold, were needed in the ranks of the industrial army marching westward. Broad and deep foundations were required to secure social, business, industrial, and educational systems that would endure.

In 1817, at the age of twenty-three, he came west seeking a location, first going to Mt. Sterling, Ky., where some friends resided. The conditions under which he chose Vigo County for his residence, as told in his own words, are

given in Beckwith's History of Vigo and Parke Counties, as follows:

"In the fall of 1817, I traversed the States of Indiana, Illinois, Missouri, Kentucky, Tennessee, and Alabama, looking for a location at which to reside and engage in business. I spent several days at Terre Haute; it had been laid out the previous year. The following winter I spent in Kentucky. Favorably impressed with the location and the people in and about Terre Haute, I returned and became a resident in April, 1818. There were but two cabins in Terre Haute, and the nearest boarding-place was at Fort Harrison, where I boarded, as did the county officers, at a house kept by Mrs. Stewart. * * * There were no direct roads. The trip East was made by way of Louisville, Baltimore, and Philadelphia. It was a source of great rejoicing when the first steamboat landed at Terre Haute, in 1822. In 1819 I moved to Parke County, and engaged in the business of milling. I sawed and furnished the lumber for the court house erected in the public square; and I returned to Terre Haute in 1825."

From that date (1825) Mr. Rose engaged in trade, and became one of the most popular and successful merchants of the region. His profits were judiciously invested in land, which he worked according to the most improved methods, until, acre by acre, it gradually passed, with the increase of population, from farm land into city lots. In these and other ways, open only to those who improve the opportunities of a new country, he amassed a large fortune.

Mr. Rose came to Indiana about two years after the adoption of the first State constitution, and, though the exacting duties incident to a frontier life must have molded his own character, it can not be questioned that his power of forming and holding fixed opinions, which were founded in his absolute integrity and great intelligence, must have had marked influence upon the new State.

Mr. Rose was foremost in securing the railway transportation in the new State. He bore the principal labor of building the Terre Haute & Indianapolis Railroad; his courage and resolution secured the construction of the road

by individual subscriptions — largely secured from his friends by his personal efforts — instead of by the aid of a grant of public land, which had not then become the fashion, and his scrupulous supervision made the road one of the best and safest in the United States. He contributed largely to the railroads from Evansville to Terre Haute, from Terre Haute to Crawfordsville, and from Terre Haute to Danville, Ill., and nothing but the approach of age withheld him from the same coöperation in building the road from Terre Haute to St. Louis by way of Vandalia.

Mr. Rose was never indifferent to the influence of religious institutions on a growing community. He contributed liberally toward the expense of nearly every church edifice in Terre Haute, not failing to recognize the equal claims of the colored people. He was always a pretty regular attendant on church till within a few years of his death. His filial regard for his mother, a most admirable woman, influenced him in his action on such matters. It is said that her opposition to his plan for going West was softened by his promise to pay her an annual visit. This promise he could not fulfill till the end of the fifth year; but the annual visit, often performed on horseback, was rarely again omitted during the good lady's life.

After her death, he gave the old homestead to the town of Wethersfield, with \$3,000 to improve it. It is now the Town Farm, a well-ordered asylum for the poor. He then added \$2,000 for the town library, and \$12,000 to endow an academy.

Mr. Rose dispensed many private charities, which were unknown to any except the recipients and himself, in which quiet field of benevolent operations he kept alive and invigorated the sentiments of philanthropy which grew and increased as the circle of his good works was enlarged. For some years before his death his mind was greatly exercised in determining the most suitable method of so distributing his property that the public should be benefited by it, espe-

cially that part of the public where he had lived so long, where he had formed many friendships, and where his wealth had been acquired.

He had strong sympathy for those who have to struggle without fault against the tide of adverse fortune which overwhelms so many victims, and the consciousness of having relieved the meritorious poor always gave him lively satisfaction.

His numerous, though unannounced acts of kindness in their behalf, prepared his mind for the larger gifts to the Ladies' Aid Society of Terre Haute, a most effective charity; the Providence Hospital, the Free Dispensary, and the Rose Orphans' Home.

It is an interesting fact that this long train of good deeds, as well as the greater one which remains to be noticed, followed, if it did not proceed, from an act of justice to the memory of his brother John, which was so unique and remarkable that it can not be omitted.

He found that, for many reasons, the will of his brother, if executed under the laws of the State of New York, would not accomplish his brother's clearly-defined intentions. The will made bequests of more than a million of dollars, and Mr. Rose became satisfied that only a small part of these bequests would reach the objects for which they were intended. He accordingly instituted legal proceedings to set the will aside, and, after nearly six years of vexatious litigation, succeeded in doing so. All the heavy expenses of this litigation were borne by Mr. Rose out of his private purse. The estate was then valued at \$1,600,000. To this sum he became sole heir, for, though Henry Rose was living at the time of John Rose's death, his equitable claim upon the estate was honorably settled by Chauncey before the proceedings for setting aside the will were begun, and Henry joined him in those proceedings.

This result, as Colonel Thompson well says, "would have put the character of almost any man to a severe test,

and a large majority of men would, without hesitation, have appropriated the money to their own use." Not so, however, with Mr. Rose. It required no deliberation on his part to decide that justice to the memory of his brother and to his own character required that the money should be disposed of by him so as to execute the objects provided for in the will as far as possible. As the representative of his brother he did this, by disposing of the money in New York for charitable objects, such as the Newsboys' Home, the Institution for the Relief of the Ruptured and Crippled, and others of like character. He made many gifts in Charleston, S. C., in commemoration of his brother's former citizenship there. For all these he dispensed more than a million and a half of dollars.

He took deep interest in the cause of education generally. But that kind of education most suitable for young men of genius, talents, and enterprise, and which should fit them for the highest spheres of practical life, was, with him, a favorite topic of thought and conversation. His leading idea was that a system should be provided that would blend the industrial sciences with the branches of knowledge usually taught in the schools and colleges, so that the pupils should not only become scholars, in the ordinary sense, but should be enabled to follow the various mechanical, professional, and industrial pursuits with intelligence and skill. He desired to build up a class of educated and scientific mechanics and laboring men, so that, in the pursuit of their various vocations, they should be able to give full scope to their inventive and constructive talents. In furtherance of his general purpose, he gave, from time to time, liberal contributions to Wabash College, at Crawfordsville. He also furnished the means of adding essentially to the library of the State Normal School in this city, and paid the expenses of a considerable number of young ladies while fitting themselves at that school to become teachers.

At last, his leading and long-cherished thought with

reference to education culminated in gifts and bequests for the establishment of the Polytechnic school. In the steps that Mr. Rose took to carry out his plan, he displayed all his best traits. Naturally distrustful of his own knowledge of schools, he went to see some of the most noted institutions that gave any knowledge or experience in such matters. The timely and judicious suggestions of his friends, especially Josephus Collett, Barnabas C. Hobbs, and Charles R. Peddle, had decided influence with Mr. Rose in his final decision to endow a polytechnic school.

To obtain the information necessary to determine in what mold the institution should be cast, he commissioned two of his associates in the corporation to make a thorough inspection of all institutions in the country that offer courses in higher technology. This committee discharged their duty most faithfully, and presented to Mr. Rose an elaborate report, in which the features and statistics of each of the great polytechnic schools in the United States are carefully set out.

Mr. Rose studied this report long and thoroughly. He sought counsel and information from every available source. The result was that he decided to repeat, as far as changed circumstances would permit, the plan of the Worcester Free Institute. He remained a member of the Board of Trustees till the buildings were completed and the general policy of the Institute fixed, when, on account of his age and infirmities, he resigned his office June 2, 1877.

AN ESTIMATE OF HIS LIFE AND CHARACTER BY HON.
R. W. THOMPSON.

In his business transactions he always displayed great sagacity, and was scrupulously exact. His mind was well balanced and his judgment generally accurate, both as regarded men and things. He read a good deal, and was a careful observer of passing events, which he analyzed with great thoroughness. He was, therefore, among the earliest

of those who foresaw the growth and prosperity of this city and county, and, indeed, of the State. These were always favorite topics with him, and so decided were his convictions with regard to them that he was always ready whensoever the occasion presented — or to create an occasion when none existed — to discuss measures tending to these ends. When the charter for the Terre Haute & Richmond (now the Terre Haute & Indianapolis) Railroad was first obtained, it was considered a matter of great doubt whether the money necessary for its construction could be obtained, as money, in those days, was not so plentiful as now. A convention was assembled at Indianapolis to consider what steps should be taken, and it was there proposed that an effort should be made to obtain a grant of lands from the United States sufficient for the purpose. A majority of the convention was disposed to favor this proposition, but Mr. Rose made such stern opposition to it that it was finally abandoned — showing in this the power and strength of his will. His defeat of the project created in his mind an impression that if the enterprise should afterward fail a large share of the responsibility would rest upon him. And this consideration, added to his great anxiety for the construction of the road, stimulated him to extraordinary personal exertions, which he immediately put forth with so much energy and perseverance that the money was raised by individual subscription, and the road built, mainly by his efforts and with capital furnished by him. But for him it would not have been built, and but for him it would not have been so well built as to have become what it is now and has always been, one of the best and safest railroads in this country. He was in this, as in everything else in which he participated, governed by the rule that whatever was worthy of being done at all was worth doing well.

He acquired the reputation of being what is popularly called a “railroad king”; and if to have been one of the foremost and most conspicuous among the pioneer advocates

of railroad improvement entitled him to be known so, the title was properly given him. He contributed very largely to the railroads from Evansville to Terre Haute, from Terre Haute to Crawfordsville, and from Terre Haute to Danville, Ill., all of which are more indebted to him for their construction than to any other individual. He advocated zealously, for many years, a railroad from Terre Haute, through Illinois, to St. Louis, and expended money liberally in making experimental surveys. But his advancing age admonished him that it was necessary for other and younger men to carry out this important scheme, and he was content to see what he had done made available in the construction of the St. Louis, Vandalia & Terre Haute road, now a part of the Vandalia line.

Mr. Rose was a resolute man. In all the enterprises in which he engaged he displayed this quality, and, in consequence, generally achieved success in what he undertook. His strong will enabled him to influence others and to impress them with his opinions. This, too, increased his own earnestness and untiring activity in pursuit of the objects he desired to accomplish; for it is one of the inexplicable laws of the human mind that its own vigor and energy is increased in the same proportion as it imparts them to others.

For some years before his death his mind was greatly exercised in determining the most suitable method of so distributing his property that the public should be benefited by it, especially that part of the public among whom he had lived so long, where he had formed many friendships, and where his wealth had been acquired.

Our citizens all know how many evidences of this were, from time to time, given by him. By his munificent gift to the Ladies' Aid Society of this city he has enabled it, under the admirable administration of its managers, to become a noble and magnificent charity. His donations to Providence Hospital were upon a most liberal scale. The medical dis-

pensary which he established in this city, where the poor are to be provided for without charge, is a work of Christian benevolence. Added to these, and to others less conspicuous, there is the Orphans' Home, with an endowment sufficient to assure its permanency, which, of itself, is enough to confer immortal honor upon his memory.

Few men have left so many evidences of a humane and philanthropic spirit, or have bestowed their charities more wisely. There is an entire absence of anything like selfishness in each one of them, and so quietly were many of them dispensed that the public knew nothing of them until their fruits were observed. As his own conscience guided him, and he needed nothing more than its approval, he did not seek after notoriety or what the world calls fame. As it was impossible to shake his purpose when it became fixed, so it was always executed without regard to mere applause. As he deliberated well and intelligently before acting, and followed the counsel of his own convictions, so he left his acts to speak for themselves, as they now do with eloquence which no words can imitate.

The many who have already been relieved by his benevolence will unite in the bestowal of blessings upon his memory. Hundreds of others yet to come, who shall share the benefactions he has so bountifully provided, will repeat his name with sincere and heartfelt praises.

But there will be none louder or more earnest than the recipients of the blessings which shall flow from this school, whose foundations he has laid with so much wisdom and foresight, and around which his affections clustered with the most intense ardor of his nature.

Of sturdy mold himself, everything he did stood four-square, and was stanch and true. Veneer had no charm for him — everything was required to be what it seemed. Genuineness, solidity, ability to bear the maximum of strain — these were his demands, and for over half a century he taught by the arduous eloquence of example, habits of punc-

tuality, probity, sobriety, industry, thrift, prudence, truthfulness, courage, and steadfastness. Reticence was a strongly marked characteristic, and because of it some of his contemporaries thought him cold and unsympathetic. Nothing could be further from the truth. He was a lover of his kind and a generous philanthropist, but every prompting of his heart to help was subject to the careful scrutiny of his head — that wise old head which guided him safely and sanely his long life through — and his last years were spent in the deliberate task of so disposing of his wealth that the substantial good which his generous heart had already planned and partly executed should be continued even after his death and made permanent.

Each and everything to which he gave — and he gave everything he had, leaving nothing to chance — had for its well-matured object the tiding of the young or the afflicted over temporary need and placing them in the way of caring for themselves and for others. Parental care for orphans, medicine for the sick, education of youth — these were the especial objects of his solicitude.

None of Mr. Rose's six brothers, nor his sister, left any descendants, and he outlived all his family. He was never married, and in his old age the wealth of his affections was turned to the founding of this school of technology, which was given his name against his wish and over his protest. Of this fathering has been born each year for a quarter of a century a generous progeny of stalwart young men, each of whom calls the Rose Polytechnic his Alma Mater, and so calling it, designates as the father of his training the man who, though dead, yet lives in immortal youth — the man whom we all delight to honor, CHAUNCEY ROSE.

WILL OF CHAUNCEY ROSE.

Mr. Rose distributed the largest part of his wealth during his lifetime to insure its disposition as he had planned. The vexatious litigation into which he was led by the threatened miscarriage of plans of his brother John in disposing of his estate under his will may have largely influenced him in this. Chauncey Rose left nothing to interpretation, but made his will so definite that his bequests could not be misplaced. As a matter of historical interest, the extracts from his will referring to the Rose Polytechnic are appended. He thought that with the making of the Institute his residuary legatee after generous donations during his lifetime, ample provision had been made for its future maintenance and extension. The phenomenally rapid growth of a demand for technical education, especially in the Middle States, and the unlooked-for expensiveness of adequately providing such education, was not foreseen at that time. Had Mr. Rose anticipated any such needs he undoubtedly would have diverted some of his other generous bequests in large proportion to the Rose Polytechnic Institute. In the East several technical institutions had already been established. There he distributed approximately \$1,500,000, the entire estate of his brother, which had been declared by law to be his own to do with as he would, to various charitable institutions. A list of the institutions in the East, together with the amounts given, is interesting, and given below. In view of this, it would seem befitting that friends of technical education in the East, those who have been benefited most by the establishment of such schools, should interest themselves in Rose Polytechnic Institute by adding to its endowments, so that in this day of greater demand for tech-

nical schools Mr. Rose's original bequest might be made more efficient, remain unimpaired, and accomplish the purpose he had in mind.

PROVISIONS IN WILL OF CHAUNCEY ROSE.

(3) I give and bequeath to the Rose Polytechnic Institute, the corporation formed under the laws of the State of Indiana by articles adopted September 10, 1874, and recorded in miscellaneous record, No. 5, pages 282, 283 and 284, in the Recorder's office, in Vigo County, in said State, under the corporate name of Terre Haute School of Industrial Science, which was changed to that of Rose Polytechnic Institute by amendment to said articles, adopted September 11, 1875, and recorded in the Recorder's office of said county the same day, in miscellaneous record No. 5, pages 359 and 360, the picture of myself, mentioned in a certain paragraph, and the sum of \$107,594.34, exclusive of the real estate, or any sum, credits, rights, effects, or property I have before conveyed, given, or delivered to said corporation.

Other paragraphs from 4-8 refer to specific bequests, mostly to charitable institutions, amounting to about \$1,235,000.

8. The residue of my estate, both real and personal, over and above any devise or bequest I have made herein, I give and bequeath and devise to my executors in trust, to be by them given, delivered, or conveyed to the Rose Polytechnic Institute, the corporation named in the third item or paragraph hereof.

(Copied from entries in Mr. Chauncey Rose's ledger between December 26, 1863, and September, 1869, made before his death.)

Children's Aid Society.....	\$220,000
Female Guardian Society or Home of the Friendless.....	50,000
Five Points Home of Industry.....	40,000
Magdalen Society.....	30,000
Aged Indigent Females.....	20,000
Female Asst. Society.....	25,000
Colored Orphan Society.....	10,000
Mariners' Female Asylum.....	5,000
Destitute Children of Seamen.....	5,000
Society for Relief of Crippled and Ruptured Children.....	72,000
Juvenile Asylum.....	20,000

Women's Hospital.....	\$10,000
Nursery for Poor Children.....	15,000
Society for Relief of Poor.....	2,000
Home for Aged and Infirm Colored People.....	6,000
Dorcas Society.....	11,000
Wilson's Industrial School.....	16,000
Children of Destitute Soldiers.....	1,000
Orphan Asylum of New York.....	21,000
Society for Relief of Disabled and Diseased Soldiers.....	20,000
New York Female Asst. Society.....	10,000
New York Colored Asylum.....	10,000
New York Colored Home.....	10,000
Society Relief Ruptured and Crippled.....	10,000
Nursery for Poor Children.....	5,000
Five Points Ladies' Mission.....	10,000
Association for Improvement of Condition of Poor.....	5,000
Home for Friendless Girls.....	5,000
Institution for the Blind.....	5,000
Industrial Farm School.....	5,000
Demilt Dispensary.....	15,000
Home for Friendless, New York.....	30,000
Eye and Ear Infirmary.....	44,000
Mariners' Female Asylum.....	5,000
Protestant Half Orphan Asylum.....	5,000
Home for Destitute Families of Soldiers.....	5,000
Colored Home.....	5,000
New York Orphan Asylum.....	2,500
St. Anne's Church for Deaf Mutes.....	2,500
Home for Reception of Magdalens.....	4,000
Aged Female Institution.....	300
Society for Crippled and Ruptured, Dr. Knight.....	10,000
Colored Orphan Asylum.....	6,000
Infirmary for Women and Children.....	2,000
Society for Aged Colored People.....	1,000
New York Society for Relief of Poor.....	2,000
Society for Relief of Aged Respectable Females.....	2,000
Eastern Dispensary, New York.....	6,000
Women's Hospital.....	12,000
Northwestern Dispensary.....	7,000
Samaritan Home for Aged.....	1,000
Union Home and School for Children of Volunteers.....	2,000
Howard Mission or Boarding House for Young Women..	3,000
Women's Evangelical Mission.....	3,500

Incurables of New York.....	\$30,000
Aged and Infirm Females.....	10,000
Aged and Infirm Soldiers.....	10,000
Aged Colored Home.....	10,000
Infirmity for Poor Women with Children.....	5,000
Association for Relief of the Poor.....	5,000
Female Assistant Society.....	5,000
New York Dispensary.....	5,000
Women's Lying-in Hospital.....	5,000
Seamen's Widows and Children.....	3,000
Children's Aid Society, Brooklyn.....	20,000
Industrial School.....	5,000
Orphans' Home.....	5,000
Colonization Society.....	5,000
Incurables.....	3,000
Orphans' Home of New York.....	6,000
Brooklyn Orphan Asylum.....	16,000
Brooklyn Industrial School or Home for Destitute Children	10,000
Brooklyn Industrial School and Home for Destitute Chil-	
dren.....	5,000
Brooklyn Orphan Asylum.....	5,000
Society Destitute Children of Seamen on Long Island.....	5,000
Women's Hospital, Brooklyn.....	10,000
Widows with Small Children, Brooklyn.....	17,000
Home Aged Women, Brooklyn.....	5,000
Aged Female Asst. Society, Brooklyn.....	2,500
Children's Nursery of Brooklyn.....	6,000
Mt. Prospect Industrial School, Brooklyn.....	5,500
Brooklyn Dispensary.....	5,000
Charleston Orphan Society.....	5,000
Wethersfield Library.....	2,500
Wethersfield Seminary.....	18,000

\$1,464,500

NOTE.—The societies and institutions enumerated are all in New York, unless otherwise designated.

HISTORY OF THE FOUNDATION AND ESTABLISHMENT OF THE ROSE POLYTECHNIC INSTITUTE.

FROM NOTES BY S. S. EARLY, 1883.

The scientific school known as the Rose Polytechnic Institute was founded in 1874 by the munificence of the late Chauncey Rose, of Terre Haute. As the life of this generous and public-spirited gentleman drew near its close, among the many suggestions that appealed to his liberality was the founding of a school in which young men might be trained in the sciences applicable to the industrial arts. Careful study of the plans and methods of such schools and consultation with numerous experienced educators fixed this suggestion in his thoughts, and out of his deliberations grew the establishment the detailed and formal publication of whose progress and purposes is set forth in the following pages.

Inviting the assistance of his trusted friends, Messrs. Josephus Collett, Firmin Nippert, Charles R. Peddle, Barnabas C. Hobbs, William A. Jones, Demas Deming, Ray G. Jenckes, General Charles Cruft, and Colonel William K. Edwards, he associated them with himself in a body corporate, in conformity with an act of the General Assembly of the State of Indiana. This act was approved February 20, 1867, with the amendments thereto, and was entitled "An Act Concerning the Organization and Perpetuity of Voluntary Associations," with various clauses relating to the repeal of former laws, and authorized gifts and devises by will to any corporation or purpose contemplated by itself.

On the 10th of September, 1874, a corporation was

formed and articles of association adopted setting forth the object of the corporation to be the establishment and maintenance, in the County of Vigo, and State of Indiana, of an "Institution for the intellectual and practical education of young men," and designing the corporate name as "Terre Haute School of Industrial Science," and intrusting its administration to the corporators under the title of managers.

It was provided that instruction in the school should be based on the practical mathematics and the application of the physical sciences to the various arts and manufactures, and other branches of active business, and should include such training as would furnish the pupils with useful and practical knowledge of some art or occupation, and enable them to earn competent livings. Preference was to be given to residents of Vigo County, moderate tuition fees were to be charged if considered necessary, and applicants for admission were to be at least sixteen years of age, and prepared to pass examinations giving evidence of a fair English education.

On October 10, 1874, the Board of Managers was organized, by-laws were adopted, and the following officers elected:

President, Chauncey Rose.

Vice-President, Josephus Collett.

Treasurer, Demas Deming.

Secretary, William K. Edwards.

At the same time a committee, comprising Messrs. Cruft, Peddle, Hobbs, Jones, and Collett, was appointed to consider plans for carrying into effect the objects of the association.

On the 12th of December the committee reported progress, and Messrs. Peddle, Cruft, and Jenckes were deputed to confer with an architect. One week thereafter Mr. Rose made his first donation, being a deed of conveyance of the ten acres of land now occupied by the Institute, and personal

securities to the amount of \$100,000. The committee on architect reported conferences with Mr. Isaac Hodgson, of Indianapolis.

December 26th Mr. Hodgson was elected architect, and Mr. Rose made a further gift of \$86,000 in bonds of the Evansville, Terre Haute & Chicago Railroad Company.

By the end of January, 1875, the architect had prepared suggestive sketches, which were submitted to the consideration of Mr. Rose, and, having met his approval, were adopted by the Board of Managers; detailed drawings, with specifications and estimates of cost, were then ordered prepared. These being in readiness by the latter part of April, on the 21st of that month they were accepted, and proposals for building were ordered solicited. Early in May a number of bids had been received, and, after due consideration, a contract for the entire building was awarded to Messrs. McCormack & Sweeney, of Columbus, Indiana, at the total price of \$81,000. On the 9th of August, all preliminaries in the way of gathering materials, executing bonds and contracts, and the like, having been attended to, Messrs. C. R. Peddle, Josephus Collett, and Charles Cruft were elected a building committee, and Messrs. Cruft, Jenckes, Nippert, and Edwards were chosen as a committee on the laying of the cornerstone.

On the 11th of the following month the ceremony of laying the cornerstone took place at 4 o'clock p. m. A large concourse of citizens of Terre Haute and visiting strangers marched in procession from the center of the city to the grounds of the school to witness the exercises, over which, by request of the Board, General Charles Cruft presided. When the company had been called to order, prayer was offered by Rev. E. Frank Howe, pastor of the First Congregational Church, and the choir of mixed voices sang a selection. The cornerstone was laid by the architect, assisted by the contractors and their workmen, and a metal box with numerous interesting memorials of the occasion was de-

posited therein. The president of the day then introduced Colonel William K. Edwards, who delivered an appropriate and eloquent address. A second musical selection was sung by the choir, and was followed by a masterly oration by Barnabas C. Hobbs, LL.D. The benediction, by Rev. Mr. Howe, closed the exercises.

On the same day a meeting of the Board of Managers was held, and an amendment to the articles of incorporation changing the name of the association from "Terre Haute School of Industrial Science" to "Rose Polytechnic Institute" unanimously passed. This alteration was not effected without persistent protest from the venerable founder; but the universal wish, not alone of his fellow managers, but of the community of his fellow citizens, that this noble benefaction should bear his own name, at length overcame his scruples, and he reluctantly gave his consent. Proper legal measures were then authorized to effect the transfer of all property from the Industrial School to the Polytechnic Institute.

The work of construction had progressed so far by the summer of 1876 that the question of heating appliances began to be considered. Proposals to furnish the requisite fixtures were invited, and in July the contract to supply them at a cost of \$8,759 was awarded to Messrs. R. P. Duncan & Co., of Indianapolis. In November of 1876 the contractors for the building had completed their work in accordance with the plans and specifications of the architect, and had added, with his approval, certain matters amounting in the aggregate to \$1,700. This sum was allowed, and on the 1st of December the final warrant for payment was drawn, the total cost of construction being \$82,700.

On the 27th of December Mr. Rose presented a statement of certain payments he had made for the benefit of the school amounting to \$31,255.66, with quittance in full thereof, and at the same time transferred to the Institute the sum of \$100,000 in certificates of preferred stock in the

Evansville & Crawfordsville Railroad Company, as an addition to the endowment.

At the annual meeting, held on the 2d of June, 1877, Mr Rose, in consideration of his **great age and infirmities**, tendered his resignation as a member of the Board of Managers. In deference to his wishes, but most unwillingly, his fellow members accepted it. Mr. Josephus Collett was elected to succeed him as President of the Board, and Mr. Charles R. Peddle was chosen as Vice-President. During the same month a contract for the building of the machine shops of the Institute (designs for which had been prepared by Mr. Hodgson) was awarded to Messrs. Clift & Williams, of Terre Haute, at a cost of \$14,400. Mr. Rose died on the 13th of August, 1877, and on the 17th of October the vacancy occasioned by his resignation was filled by the election of Mr. William Mack.

The total of Mr. Rose's gifts to the Institute, prior to his death, reached the sum of \$345,614.61, and embraced the following items:

Value of ten acres of land (site of the school).....	\$20,000 00
First gift of securities.....	100,000 00
Second gift of securities.....	86,000 00
Quittance for moneys paid by him.....	31,255 66
Third gift of securities.....	100,000 00
Paid by him on account of heating apparatus.....	8,150 00
Paid by him for grading and graveling.....	208 95

By his will a specific legacy of \$107,594.34 was bequeathed to the Institute, and after the payment of his devises to his family, to the Rose Orphan Home and to the Free Dispensary, it was constituted his residuary legatee. What may be the exact amount to be derived from the settlement of the estate it is impossible to determine, but it is reasonable to estimate that the total aggregate of his donations to the school will considerably exceed \$500,000.

On the 26th of September, 1878, Colonel William K. Edwards, who had most ably and efficiently discharged the

duties of Secretary of the Board of Managers from its organization, died, and, on the 2d of November, Mr. Samuel S. Early was chosen to succeed him. Toward the close of the year the machine shops were finished, and some debts which had been incurred in the various works of construction were paid. The question then arose whether, with the means remaining at their command, the Managers could purchase the costly equipment required for the school, and pay its running expenses, should they put it in operation. Committees and officers of the Board were deputed to visit the principal institutes of technology in the country, and make careful investigations concerning their appliances, methods of management and cost of maintenance. From these investigations it became evident that it would be impossible to procure the outfit without a serious impairment of the productive endowment necessary to furnish revenues sufficient for the current outlay of a school of the character Mr. Rose had desired to establish. There was no alternative, therefore, but for the Managers to defer the opening until accumulated income should supply funds for the outfit and the settlement of Mr. Rose's estate should swell their permanent resources to the required amount. It was not until the beginning of 1882 that these results had been approximately attained. By that time the executors of Mr. Rose were enabled to pay the specific bequest — for the greater part in cash and productive investments, with the remainder in valuable real estate — and accrued interest had then so far grown as to provide a basis for the purchase of equipment.

Pending this delay, some further changes had occurred in the personnel of the Board. The prolonged absence in Europe of Dr. B. C. Hobbs, as a member of the World's Peace Congress, and the removal to Mt. Vernon of Mr. R. G. Jenckes, led to the withdrawal of both these gentlemen in January, 1879, and on the 31st of that month Messrs. Robert S. Cox and Preston Hussey were elected to fill their

places. Trusty custodians had been appointed to care for and protect the buildings, and small outlays had been made from time to time for books, apparatus and specimens for the cabinet. Diligent inquiry as to the availability of candidates for the professorships of the Faculty had been prosecuted, and a number of eminent educators had been invited to visit Terre Haute and confer with the Managers upon the future organization and conduct of the school. Prominent among these had been Dr. Charles O. Thompson, Principal of the Free Institute of Technology, at Worcester, Mass.; Prof. William D. Marks, of the University of Pennsylvania; Prof. T. C. Mendenhall, of the Ohio State University, and Prof. F. W. Clarke, of the University of Cincinnati, from all of whom most valuable counsel and suggestions and hearty encouragement had been obtained.

Finding themselves, by the receipt of the specific legacy, possessed of funds yielding an income of about \$25,000, the Managers felt that the time had come when they might take the necessary measures for opening the Institute. Their first important step was the election of Dr. Charles O. Thompson, of Worcester, Mass., to the presidency of the Faculty. This occurred on the 20th of February, 1882, and the President of the Board, with the Secretary and General Charles Cruft, visited Worcester for a personal conference with Dr. Thompson. Toward the end of March he accepted the appointment, and immediately began the work of selecting a Faculty and preparing a detailed plan for the organization of the school. Professors of Chemistry, of the elementary and the higher Mathematics, of Drawing, as also a Superintendent of the Machine Shops, were offered places and accepted them. Those whose services were necessary reported for duty as soon as their prior engagements admitted, and by the end of the summer of 1882 great progress had been made in the work of preparation. It was found that a small class could be provided for by the beginning of March, 1883, and in August of 1882 circulars were

published inviting applications for admission. An opportunity for the purchase of the apparatus and library of the late Dr. John Bacon, of Harvard College, was seized by the Board, and an admirable collection of instruments and scientific books was added to the resources of the school. Power machinery and tools for the shop were purchased by Mr. Edward S. Cobb, the Superintendent, under the sanction of a committee composed of Messrs. Peddle, Nippert, and Cox, cases for the mineralogical specimens were constructed, after the plans of Prof. Charles A. Colton, of the Department of Chemistry, and the excellent collection was mounted, labeled, and stored under his skillful labors. Shelving designed by Prof. Clarence A. Waldo, the future Librarian, was provided for the library, and the early purchases of the Board, together with the Bacon library, were catalogued by the Secretary and arranged by members of the Faculty. Large additions to the library and apparatus were made by President Thompson, who had sailed for Europe, in July of 1882, for study of the methods and progress of technological instruction in the more advanced schools abroad. Tables, easels, models, in brief, all the appliances required for the department of drawing, were procured upon the suggestions of Prof. William L. Ames, of that department, and, by the time anticipated, everything was in readiness for the opening. On the 6th of March candidates for admission were examined, and a class of twenty-five members selected from the proficient.

In the President of the Worcester Institute of Technology, Charles O. Thompson, the Managers secured a graduate of Dartmouth College in high standing for general scholarship, and with special aptitudes and acquisitions required in technological instruction, and who, before finding his special field as organizer and teacher of an American school of technology, had taught with eminent success several public high schools, each in succession of a higher grade in studies and compensation, and who, from the start, had

shown himself an earnest, diligent, catholic scholar and inquirer after the best methods of teaching the essential things, and securing discipline by keeping his pupils interested and occupied in their work. Before entering on the administration of the Rose Institute, he was allowed to refresh his own faculties by the rest of travel and of observation in fields having a special interest to him in his past and future work, and which he was now prepared to look at with the discriminating and appropriating judgment which actual experience alone can give. Thus equipped by natural endowments, general training, and special experience, President Thompson entered into full possession of his new position and duties on the 7th of March, 1883, with an inaugural address setting forth the nature and claims of an educational institution like that of the Rose Polytechnic Institute, and with the fullest confidence of the Board of Managers and the best wishes of a host of old friends among the teachers of the country.

ARTICLES OF ASSOCIATION OF THE TERRE HAUTE SCHOOL OF INDUSTRIAL SCIENCE.

ARTICLE 1. The subscribers who have signed these articles, setting out their respective places of residence, voluntarily associate themselves to organize a body corporate to be maintained in the County of Vigo and State of Indiana, in conformity to an Act of the General Assembly of the State of Indiana, approved February 20, 1867, and the amendments thereto. Said Act is entitled "An Act concerning the organization and perpetuity of voluntary associations," and repealing an Act entitled "An Act concerning the organization of voluntary associations and repealing former laws in reference thereto," approved February 12, 1855, and repealing each Act repealed by said Act, and authorizing gifts and devises by will to be made to any corporation or purpose contemplated by this Act."

ARTICLE 2. The objects of this Association are to promote, encourage, and teach the mechanical arts and sciences for all practical purposes. To this end there shall be established and maintained at the County of Vigo and State of Indiana, perpetually, a free insti-

tution for the intellectual and practical education of young men especially in the principles of the mechanical arts as applied to the various trades and avocations in life. Said institution shall be free from all sectarianism, and shall be under the control and management of the subscribers hereto, and their successors chosen as hereinafter provided. It shall be open to males of at least sixteen years of age, of good moral character. When the institution may be full, preference shall be given to the admission of residents of the County of Vigo. Instruction shall be provided therein from time to time, based on the practical mathematics and application of the physical sciences, to the various arts, manufactures, agriculture, horticulture, and all branches of active business, and be conducted upon such general system as will elevate the moral and intellectual condition of the pupils by training them for the activities of life, and furnishing such useful and practical knowledge of some art, trade, or occupation, with general business habits, as will enable them thereafter to earn a competent living.

Prominence shall be given to the following studies, but not to the exclusion of other useful arts and sciences in harmony with the general design of said institution, as before expressed, which may be deemed expedient or desirable, viz.: Mathematics, Physics, Industrial Mechanics, Chemistry, Natural History, Civil Engineering, including drawing, designing, and modeling, also Mechanical Engineering and Mining Engineering.

Architecture with reference to drawings, styles of buildings, plans, materials, estimates, and ornamentation.

Geology applied to mining and agriculture. Astronomy, Physical Geography, Botany, Horticulture, and Agriculture.

English Language and Literature with reference to writing business correspondence, contracts, and reports.

Bookkeeping, and so much of the Latin Language as will enable the student to understand the terms of science used.

The common schools teach the common English branches fully, with an appreciation of their uses; it is therefore expected that each applicant for admission will be able to pass a satisfactory examination therein, that a preparatory school shall only be formed temporarily to enable exceptional and meritorious applicants to pass the entrance examination.

Appropriate degrees may be conferred.

In case only it shall be absolutely necessary to sustain the institution, moderate tuition fees may be charged.

ARTICLE 3. Terre Haute School of Industrial Science is the corporate name adopted to designate the objects of this Association.

ARTICLE 4. The corporate seal shall be circular in form, one and a fourth inch in diameter, contain the corporate name, the name of the State, Indiana, and the representation of a pivot as a device.

The impression shall appear the same as it does affixed to these articles.

ARTICLE 5. That the management of the business and prudential concerns of this Association shall be controlled by the members hereof, and their successors and associates, who shall be termed Managers, they shall adopt rules and regulations for their own government and for the government of the institution, not inconsistent with these articles and laws of the State of Indiana. They shall appoint or elect all officers, professors, teachers, and agents. Annual meetings shall be held when full reports of the affairs and condition of the institution shall be made. Special meetings may be called by the presiding officer of the Board of Managers, or by a majority of the Managers.

The members may increase their number at their discretion, upon sufficient consideration. The surviving members shall fill every vacancy that may occur in their body, by death or resignation, at the earliest practical time, without unnecessary delay, and in this manner perpetuate this institution. It shall require a majority of two-thirds of the members to elect a successor to fill any vacancy that may occur in the membership, or to elect a member in case of the number being increased.

If any member shall fail to attend two consecutive annual meetings, unless prevented by sickness or some unavoidable circumstance, he shall be deemed and taken as having vacated his membership, and a successor shall be elected, as provided for in case of death or resignation.

It is expressly provided that every gift, devise or bequest received or accepted shall be used and enjoyed only upon the terms and conditions prescribed by the respective donor or devisor.

ARTICLE 6. These articles may be amended by a three-fourths vote of the members at any annual meeting, or at a meeting called specially for that purpose upon notice to the members. No amendment shall be made to change the general objects of this Association, or to authorize the expenditure of any part of a gift, devise, or bequest, different from the intention expressed by the donor or devisor.

Adopted and given under our respective hands, setting out our several places of residence, with the seal of this corporation affixed, at Terre Haute, in the State of Indiana, this tenth day of September, A. D. 1874.

<i>Names of Members.</i>	<i>Residence.</i>
Chauncey Rose.....	Terre Haute, Vigo County, Ind.
Charles R. Peddle.....	Terre Haute, Vigo County, Ind.
William A. Jones.....	Terre Haute, Vigo County, Ind.
Josephus Collett.....	Newport, Vermillion County, Ind.
Barnabas C. Hobbs.....	Bloomington, Parke County, Ind.
Demas Deming.....	Terre Haute, Vigo County, Ind.
Firmin Nippert.....	Terre Haute, Vigo County, Ind.
Ray G. Jenckes.....	Terre Haute, Vigo County, Ind.
Charles Cruft.....	Terre Haute, Vigo County, Ind.
William K. Edwards.....	Terre Haute, Vigo County, Ind.

On September 11, 1875, an amendment to the Articles of Association was adopted changing the name of the Terre Haute School of Industrial Science to Rose Polytechnic Institute, with the adoption of a new corporate seal.

The following by-laws were adopted at a meeting of the Board of Managers on October 10, 1874:

1. The officers of the Board of Managers shall consist of a President, Vice-President, Treasurer, and Secretary, who shall discharge respectively their appropriate duties. Those elected at this meeting shall serve until the first Saturday in June, 1875.

2. The annual meetings shall be held on the first Saturday in June of each year, when officers shall be elected for the year ensuing. Each officer shall serve until his successor is elected and enters upon his duties.

3. Each officer shall give bond in such sum as the Board shall approve.

4. These by-laws may be amended at the pleasure of the Board of Managers, by a three-fourths vote of the whole number.

The first election of officers being held, resulted as follows:

For President, Chauncey Rose.

For Vice-President, Josephus Collett.

For Treasurer, Demas Deming.

For Secretary, William K. Edwards.

DR. THOMPSON'S INAUGURAL ADDRESS,
MARCH, 1883.

The Rose Polytechnic Institute is a school of technology. To understand the functions of the school it is necessary to take a brief survey of the field of technical training. This phrase describes all those forms of training youth which deal with the application of art or of science to the industrial arts. Those schools in which designing for the patterns of textile fabrics, or for the decoration of wood, iron, pottery, gems, etc., is the principal end are called art schools or schools of design, of which the South Kensington system is the most famous example; all those in which the principles of physical science are studied with reference to their application to the solution of practical problems in building, machine construction, and design, or in civil engineering, are called polytechnic or technological schools. There is great confusion just now in the use of terms, technical education being used to describe all that which aims at a directly practical end, as opposed to the education given at the college; while that part of it which does not deal with ornament or textile design is sometimes described by the same term. The word technology, which formerly signified the terms used in the sciences, now means the application of the sciences to industrial ends. The term polytechnic, originally used to describe schools of technology, has refused to yield to the more desirable synonym, technological, partly because it is an easier word, and partly because it contains a suggestion of the many-sidedness of the subject which the better word lacks. There is no good word corresponding to polytechnic or technological to apply to the persons who practice the profession indicated, and so these

persons are called, now as always, engineers, and the business engineering. A few still cling to the term scientific schools in speaking of these institutions. In the present prevailing confusion of terms the best that can be said is that a polytechnic school teaches technology to engineers. Below the grade of the polytechnic there are multitudes of schools and parts of schools that teach the elements of the mechanic arts — many of them of the greatest interest and importance — and around it are many institutions that devote themselves to industrial art; but I must deny myself the pleasure of discussing any of these, with the important collateral questions of policy that they present, and proceed at once to the school we have in hand — the polytechnic.

We shall find that all schools of technology, under whatever name, or with whatever special aims, present a common system of instruction complete in itself, with strenuous requisitions, a logical curriculum and a sharply-defined end. In treating of technology, I am happily absolved from the duty of pointing out its importance; that is settled by the establishment of this school and others like it by the men who endowed them. They were men whose sagacity was too strong to be mistaken.

Technology is essentially a new idea; it is certainly no older in its present aspects than the discovery of the law of conservation of energy — the great idea of the present century.

No discovery since that of gravitation has been so stimulating or so powerful. Its influence is incalculable. It is seen in the multiplication of labor-saving machinery for every form of work, the great array of useful inventions, the expansion of the system of land and ocean highways, and especially in the immense increase of the means for acquiring knowledge.

This demand for economy of force and material has brought about great changes in the industrial arts; the apprentice system has disappeared; the necessaries of life

being made by machinery, manual trades are no longer needed for that end, and skilled handicraft is a rare accomplishment. There is and there will always be a demand for skilled labor in the arts of building construction, in pattern making, and similar forms of woodwork, in die sinking and kindred arts that deal with the metals, and especially in assembling and finishing the parts of structures as they are delivered from machines; but this is a small demand compared with what existed when shoes, clothes, furniture, and tools were made by hand. The mechanic of the future will be a machinist. To such an extent is this replacement of handicraft by machinery true, that we have shoemakers who can not make a shoe, chairmakers who can not make a chair, and generally artisans ignorant of the whole of any art. Mr. Batchelder, of North Brookfield, Mass., the largest shoe manufacturer in Worcester County, said that out of his six hundred men not more than ten could make a shoe. I once examined a very interesting picture of some pieces of iron that had been done by boys in an experimental forge shop; the work seemed to be well done and creditable to the workmen; but out of some seventy pieces not more than ten would ever be made by hand at all in actual manufacturing. Another result of the economy of force is that attention is concentrated now more upon the principles of phenomena than upon the phenomena themselves. Formerly the only hope of finding a better or cheaper way of doing things lay in the chance discoveries of ingenious men—men looked at things from the outside in; now it is seen that nothing is so fruitful and that nothing so advances human interests as a principle—men look at things more from the inside out. For nearly all mechanical ways of doing things were once regarded as out of the ordinary course of human affairs, and to be relegated, if not to the domain of the supernatural, at least to that of the super-human. The feeling toward scientific investigation as a means to practical ends partook of the same quality that

infested men's views of disease; if typhoid fever prevailed in a given district, people did not look to their drains and wells, but flocked to the church and appointed a day of fasting. What were regarded as the pardonable vagaries of Daniel Treadwell, Rumford Professor in Harvard University, turn out now to be the inventions upon which single-track railroads, the machinery for spinning cordage-yarn, the Armstrong, Blakeley, and Krupp cannon depend. I will venture, however, the assertion that no person in this audience ever heard before of these great inventions as Treadwell's; they came too soon for the world to know them as works of genius, yet they are the first fruits of the new era in which great problems are solved, not by happy inventions of geniuses real or affected, but by the sober and steady application by laborious scholars of established principles of physics. Time would fail me to enumerate the influential inventions that have sprung from a similar origin. Who has not heard of the Siemens furnace, the Bessemer converter, dynamite, compressed air, and the uses of electricity? And it must also be remarked that each of these inventions demands corresponding machinery of novel design; for another feature of the new era is the necessity of reconstructing old machinery in more economical forms and the constant call for new machinery to meet new demands. When a new invention is made nowadays, machinery for it is as important as the invention itself. Perhaps the most striking illustration of the change in common things which has been brought about by technology is the rail on which railway traffic is conducted; formerly it was an iron-edge rail, supported by chains and having more iron in the base than the head; clumsy as this rail was, it was claimed to be the only form in which the only available metal could be used for the purpose; now the rail is made of steel, with well-defined tread, web, and base, the principal weight of metal in the head, where it is most needed, and every line subjected to the finest physical tests. To those who know

how much of the best knowledge we have of physics and chemistry has been put, and is still put into a railroad rail, it seems one of the most interesting of all modern manufactures. It is not wide of the mark to characterize the past age as one of invention, the present as one of engineering. The study and mastery of the principles of physical science, the ability to express those principles in drawing and descriptions, and to apply them to the solution of practical problems through machinery and handicraft, are the essential qualities of an engineer. So that a polytechnic school, by whatever name called, technological, technical, or engineering, teaches technology to engineers, *i. e.*, it teaches the principles of physical science and their application to the industrial arts.

Engineering is the term that includes all the arts of production and construction which arise from the physical sciences. Its object is to bend the forces of nature to the service of man.

The names applied to the different branches of engineering are not always appropriate, but, in general, a civil engineer constructs public works, such as highways, railroads, water works, sewers, etc.; a mechanical engineer deals with machinery, from the original design of each part, through the machine shop and into the structure and to the operation of the structure, *i. e.*, the machine; the chemical engineer applies chemistry to the manifold products that result from the play of chemism. Then there are numerous fields which the term covers: as hydraulic, steam, gas, electrical engineering. In each and all, the engineer is distinct from the artisan or craftsman by exactly the amount of his knowledge of the scientific principles which underlie the practice of his profession and his resulting ability to apply those principles to the ready and complete solution of real problems as they arise.

For example: Mr. Batterson had occasion to cut a block of marble so as to produce a warped surface, for which his

workmen had no patterns; the men had great skill in stone cutting, but could not cut that stone. A graduate of a school of technology happened to be employed in the city schools as teacher of drawing. Hearing of the case at the marble yard, he tendered his services, applied the familiar principles of stereotomy, made patterns, and the men at once executed the work. Last November the Italian Government made comparative tests of the power of different armor plates to resist the shot of heavy ordnance; the plates that stood the test were made by Schneider, at the shops of the French technological school at LeCreusot.

The bridge over the Vistula River, at Warschau, was built by a graduate of Carlsruhe; that over the Volga by English engineers; but the latest, largest, and most costly bridge in Russia — over the Neva — was built by graduates of the Imperial Technological School of St. Petersburg, and every piece of iron that entered into it was tested in the laboratories of that school.

A few years ago it became suddenly desirable and important to pump out the central shaft of the Hoosac Tunnel; a suction pump was plainly inadmissible; the craftsmen had nothing to suggest; a young engineer built a small raft on the surface of the water in the shaft, lowered on to it a steam pump, set his boiler at the shaft mouth, had himself lowered to the raft, and alone in the darkness worked his pump twenty-six hours without accident and with great efficiency. Men then tendered their services in abundance, and the problem was soon solved.

But the air is full of modern instances of the triumphs of engineering skill in overcoming great natural obstacles: the use of the inclined plane in the zig-zag roads over which horses trot in safety and at ease from Alpine heights to the valleys below; the application of compressed air to the two purposes of sinking caissons and driving machines at a great distance from the source of power; the use of the friction clutch, the air brake, and a thousand other examples of the

application of the familiar principles of science to the solution of mechanical problems. In each case, however, it will be noticed that one may understand physics thoroughly, as thousands of men have understood the subject, and another may understand the construction of machinery, but not one of the triumphs of engineering above mentioned be achieved. The theoretical knowledge of physics and the practical command of machinery must come together; if this happy conjunction occur in one and the same man, the best results follow. Then the same affluent good comes forth in the domain of mechanics that abounded in the Middle Ages, where the artist and the artisan were one; when Peter Vischer and Quentin Matsys worked at blacksmithing, and Michael Angelo cut stone, and Benvenuto Cellini hammered silver and gold, each touching the iron, or the stone, or the silver, with a beauty and value that all the ages since have only enhanced.

Here some one will surely interpose the fact that E. B. Bigelow, the inventor of the modern carpet loom, and one of the greatest of American inventors, could neither make one of his own machines nor the working drawings for it. His head was an amazing tangle of mechanical contrivances, but the draftsman and mechanic were indispensable to the successful evolution of them. This, of course, was a temperamental matter with him. We can not change the fact that many inventors can not express their own ideas; nor am I going to claim that any amount of training or of any other kind of training is likely to aid a so-called mechanical genius very much. Indeed, Mr. Bigelow never admitted, to me at least, that a course in technology would have aided him; the nearest approach to such a concession was the remark, at the close of a busy forenoon spent in studying the Worcester school: "Well, I'll go home and consider how all this would have affected me had I begun here as a boy." I do not think he would have begun there or in any other school, for he was a genius in the best sense. A genius is a law

to himself; the processes by which the mass of men must gain knowledge are strange and useless to him; generally he is a poor adviser in educational questions. He can never be educated in any sense in which the word is understood by ordinary men. Still, by a knowledge of the principles of mechanism and the methods of expressing and applying those principles, the ordinary inventor would secure to his use the benefit of his own inventions which somebody else so often appropriates, and would save the Patent Office much of its costly and superfluous rubbish. No graduate of any school is at that time an engineer. The qualities of good judgment and efficient reason grow only in the atmosphere of experience. Hence no diploma can be regarded as meaning anything more than that the possessor has passed successfully the examinations that are set at any particular school. Graduates should begin at the bottom of their profession, and their school training will tell best and most effectively in the rate of their advancement. They will advance more rapidly than others along the lines which are determined by their natural aptitudes.

The Almighty makes superintendents and leaders of men — no school can do this. But the training required for a superintendent must be that of his subordinates. All the best experience of the world sanctions this rule. A superintendent who has not had the training of the shop is as useless as Achilles without his weapons — he may seem and assume to direct and to lead, but he does not; on the other hand, the man who attempts to lead without natural leadership, however wise, is as useless as the weapons without Achilles.

The question how men shall best be trained for engineering was asked long ago before any practical result ensued.

The Marquis of Worcester, imprisoned in the Tower of London, 1645, working industriously upon his steam and water engines, cast eyes upon a lot which he could see from his window, and instructed his agent to buy it, intending, he said, as soon as he was set at liberty to erect a school

wherein boys might learn something of the principles of the mechanic arts. But he was never allowed the opportunity to carry out his ideas.

There is an interesting letter from President Leonard Hoar, of Cambridge, to Robert Boyle, in which the good man, after acknowledging some favors from Boyle, discloses to him some darling projects of his own about the improvement of the course at the University, and says: "I would have a large, well-sheltered garden and orchard for students addicted to planting; an ergasterium for mechanic fancies, and a laboratory chemical for those philosophers that by their senses would cultivate their understanding; for the students to spend their times of recreation at them; for reading or notions are but husky provender." Boyle did not encourage the President, and his project slumbered for two centuries, but was at last substantially realized in the Lawrence Scientific School.

The first independent polytechnic school was the *Ecole Polytechnic*, in Paris, founded in 1794. The *Ecole Centrale* followed, and during the first quarter of this century similar schools were established all over France, Switzerland, and Germany.

In this country the best appointed and, on the whole, the most worthy of study as far as methods go, is the Military Academy at West Point; then we have the Columbia School of Mines at New York, the Sheffield at New Haven, the Rensselaer at Troy, the Institute of Technology at Boston, the Stevens Institute at Hoboken, and many others. These are examples of pure and independent schools of technology, each with a special end of its own, but possessing all the generic features of the class. They all arose from the demand for engineers in the arts of peace and of war. To this list must be added the State colleges of agriculture and the mechanic arts, several of which have made provision for effective teaching in engineering. The polytechnic school has always offered to the qualified average boy a good edu-

cation based on drawing, the mathematics, the living languages and the physical sciences, tending to qualify him for immediate entrance upon the duties of an engineer. The course of study in a polytechnic school is determined by long experience, and in all countries is substantially the same. It includes:

Mathematics—Beginning with algebra and geometry, and proceeding through trigonometry, analytical and descriptive geometry, the calculus, theoretical and applied mechanics.

Physics—From the elements to the solution of problems, sometimes with laboratory practice.

Chemistry—With laboratory practice.

Language—The elements of German and French (English replacing one of these in European schools), and the mother tongue.

Drawing—Beginning with free-hand and including perspective, orthographic, and isometric projection, shades and shadows.

Geology and mineralogy as far as time permits. The other natural-history sciences are necessarily omitted, except in special cases. In all these schools the instruction is given with a strong practical bearing, and generally the students learn the manipulation of the instruments used in surveying, and the more important of those used in physical researches.

It is necessary to remark at this point that technological schools do not include schools of design. There is a great interest in European countries and in the United States at the present time in what is called industrial art, meaning the study of form, color, and ornament to render structures and manufactured goods intrinsically more beautiful, and to increase their value by this means. A department of drawing and design has a place in the school of technology, but engineering does not naturally include the work of a school of design.

But polytechnic schools as they were did not meet all

the wants of the new era. Practical men detected a lack in engineers who had been trained without actual contact with a machine shop — there was a surplus of theoretical engineers and a dearth of practically efficient ones.

The principle of the division of labor resulted in making it next to impossible for a boy to find a place in any machine shop to learn the trade. The owner did not want him because it could not be in any way conducive to his business interests to employ a person ignorant of his business; and if he employed him at all, he kept him on a single sort of piece-work, from motives of self-interest. Trades unions conspired to keep out apprentices from shops, and so it came to pass that a boy could not get a good working knowledge of machine-shop practice except by stealth.

This demand for mechanical engineers with work-shop training, and the practical impossibility of finding a place for a boy in any good machine shop, led to the establishment of a polytechnic school in which a manufacturing machine shop is a prominent and thoroughly-administered feature. This is the school known as the Worcester Free Institute.

This institution was organized under the influence of a belief that, after all that has been done in technology, there is still need of a system of training boys broader and brighter than "learning a trade," and more simple and direct than the so-called "liberal education"; that while the boys should be thoroughly trained in all the essentials of a polytechnic course, they should also find a workshop open where they could get all the essentials of a trade; so that upon graduating they should have sufficient knowledge of machinery and handicraft to enable them to earn a living while pushing their way up to the highest positions for which nature and their training had qualified them.

It was held that not the least important of their qualifications for high positions is a good experience of the lower positions.

"It is the undoubting opinion of the managers of the

Institute, and of all who have watched its operation, that the connection of academic culture and the practical application of science is advantageous to both, in a school where these objects are started together and carried on with harmony and equal prominence. The academy inspires its intelligence into the work of the shop, and the shop with eyes open to the improvements of productive industries prevents the monastic dreams and shortness of vision that sometimes paralyze the profound learning of the college."* This school was opened in 1868, with the following fundamental ideas:

1. That all mechanical engineers will find their account, in future, in going through a workshop training.

2. This workshop instruction may precede, accompany or follow the intellectual training, but for many reasons it preferably accompanies it.

3. The workshop instruction is best given in a genuine manufacturing machine shop where work is done that is to be sold in open market and in unprotected competition with the products of other shops.

4. That in a course of three and a half years, working 800 hours the first half year and 500 hours a year thereafter, a boy beginning without any knowledge of mechanics can acquire skill enough to offer himself at graduation as a journeyman and will be found on trial not inferior to those who have spent the entire time of three and a half years in a regular machine shop.

5. That the workshop practice must be a part of every week's work in the institution; that it shall be momentarily supervised by skilful men, and that the student must not expect or receive any pecuniary advantage from it.

6. That the question who shall be a superintendent or foreman or engineer in designing or drafting machinery can not be settled in any school — that being a question to

* Worcester Catalogue.

be determined only by actual trial; because the discipline of the judgment by actual practice into which personal responsibility enters is vitally essential to a valid claim to the post of superintendent. Hence, it will follow that, while all receive the preliminary training requisite for engineering, many will not attain to it, but these will find a full reward for all their time and labor in superior intelligence as workmen — in being masters and not servants of the machines which they make or run.

7. A seventh principle was announced when the first class graduated, and has been inculcated into all their successors, viz.: that the value of the education they have received will show itself in the rate of their advancement and will be easily detected by their employers, and that they should not be so much concerned, in seeking places, about great wages or high positions as about the chances ahead for advancement; indeed, there might be cases in which they could well afford to work a while for a bare subsistence, such would be the value of their experience.

These principles have now been tested under as favorable conditions as could be desired for fourteen years, and this experience all goes to confirm them. No valid objection has been urged and no adverse criticism worth a moment's attention has been heard. The expense attending the proper development of this plan is the only difficulty in the way of its general adoption; but, within the brief period of its existence, the Worcester School has seen two great institutions founded on its plan, the Miller School of Virginia and the Rose School at Terre Haute. No argument is needed to prove that an engineer should have practical acquaintance with handicraft and with the machine shop in general. The great demand for men who have this qualification and the surplus of unemployed theoretical engineers, otherwise able and competent men, who lack it, shows that the point is well taken. The experience of the older countries sustains this view. It is found in Austria, so the Baron

Von Eybesfeld, Minister of Public Instruction, told me, that there is a great excess of graduates of the polytechnic over the demand, and that he is now engaged in organizing a new kind of school in which workshop instruction shall form part of the course, so that the country may have some men for foremen and superintendents of works who are thoroughly versed in the practical details of machine-shop work. In carrying out this new policy, the latest phase, it will be noticed, of technology, the great Gewerbe Museum has been organized and put in charge of Dr. Exner, a strikingly competent and efficient man. He has started two totally distinct sorts of schools; the first is substantially a half-time school, in which boys from the higher common schools work half the day and study the other half, receiving instruction according to the polytechnic plan as far as the time permits; the course being two years, these boys do not receive as much instruction as the polytechnickers, but they have the immense advantage of practical power in the shop, which secures them a living and adds to their value. Every stroke of work in the shops is done with reference to the sale of the articles, and no fact was mentioned oftener, or with more evident satisfaction by Dr. Exner in proof of the solid excellence of the school, than that they sold in the first year a thousand gulden worth of their work. It is intended to multiply these schools so that they shall provide a great variety of mechanical practice (the two now in operation being devoted wholly to wood working) and to extend the course to four years. When this has been done there will be in Vienna two schools in which all the principles of the Worcester Institute will be adopted and applied.

The second line along which the Austrians are moving is in cultivating what are known as cottage industries. This movement is so interesting that I shall venture to say something about it, though it is not immediately germane to our purpose. There is a marked tendency in Austria to concentrate population in large cities. The population of Vienna

has grown from 800,000 to 1,200,000 within ten or twelve years, and other cities show a great increase. This has occurred without a corresponding increase in the total population. The inference is, that the growth of the cities is depopulating the villages — an unmistakable and alarming fact. Inquiry into the causes of this movement has brought out the fact that peasants of these villages have lost the market for their baskets and other wares, because their Swiss and French neighbors, who have had abundant schools of industry, have devised new and more attractive forms for the same wares. The peasants of Austria were unable to compete, because, through their ignorance of design, they were confined to the old and unsalable forms, and with the fatuous haste so often seen, crowd the cities in the vain hope of bettering their lot. Dr. Exner, under the general direction of the wise and acute Minister of Public Instruction, has started schools for basket weaving — by far the most important of these household industries. Half of the day is devoted to learning new and better ways of basket weaving, and half to drawing and modeling in clay, the result being that the pupils learn how to do things that are now in demand, and are clothed with power to design whatever forms the future may suggest. Anybody may attend these schools who chooses to come to Vienna; for there only can a museum of examples be gathered sufficiently ample to enable the Minister to multiply the schools so as to provide for other industries as well as basket weaving. The hope is, that the more intelligent young peasants will attend these schools and carry back to their villages the new ideas; this being done, a check will be put upon the tendency of people to leave the villages, because they can again be prosperous and happy where they are.

Upon the question whether workshop instruction should precede, accompany, or follow the school training, opinions differ, and a full discussion of the subject is impossible within the limits of this address. This subject occupied the

attention of the American Institute of Mining Engineers through two prolonged and intensely active sessions in 1876, and the results are embodied in a valuable pamphlet which presents the views of the ablest engineers in the country.

I will briefly summarize the facts and motives which seem to leave us practically no alternative but to incorporate the shop practice with the school work. Boys fitting for a polytechnic school can not leave the preparatory school younger than sixteen; if they are to get their shop training before the polytechnic, they must spend three years at it, and at the end of the time they will be rather too old to get the best advantage of the school, and miss the all-important opportunity of applying their theoretical knowledge as they go along.

If, on the other hand, boys defer the shop till after graduation, they will find many excuses for slighting it or for not doing it at all. At the age of twenty, with a good knowledge of drafting and well-disciplined faculties, American boys would be far more likely to turn into draftsmen or to take their chances in business than to submit to the dull routine of elementary shop practice. Theoretically, there is much to be said in favor of this plan, for it brings to the workshop the trained powers of the school and makes the practice continuous. It is the plan of the Russians, in the Imperial Institute of Technology at St. Petersburg, certainly one of the best technological schools in the world, where the students, after a four years' course in technology, with the usual holidays and vacations, return on the first day of September and work in the machine shops till the first day of the following September, ten hours a day without vacations, and the results are very satisfactory. But the Russians can carry out such a system because the government controls the positions to which the students aspire, and without which they must starve, and makes the fifth year of practice compulsory. Very few who have had much

experience in teaching American boys believe that such a plan could be successfully adopted here.

There are many solid, positive reasons in favor of incorporating the shop practice with the intellectual discipline. The period of a boy's life between sixteen and twenty-one is the period of sharp acquisition; ideas taken then remain in a special sense a part of the mental furniture forever. Probably no one, whose course of education is uninterrupted, acquires as much as between the ages mentioned, or retains what he acquires as long. It is an interesting fact that the enthusiasm which an American boy cherishes for his college, an English boy feels for his school, where the training he most values was received. The American hurrahs for Yale or Harvard — the English for Eton or Rugby. The same would be true here were all our boys fitted for college at a few large schools and fitted as well. This being true, shop practice has an advantage it would otherwise lose in coming into this period.

Again, a man whose matured and furnished mind has laid hold of the strong problems of theoretical mathematics in school, and who finds himself on the threshold of manhood, does not bend himself with just the same ease as an ungraduate to the elements of machine-shop practice. There is some advantage, too, in beginning shop life in periods of five hours semi-weekly over ten hours a day; for less time proportionally is wasted. And, finally, a great economy of the precious time of the students is secured because shop work serves the double purpose of practice and of exercise.

Why the school workshop should not be a shop in a complete sense, and not a mechanical laboratory or some other device for escaping the hard but necessary discipline of a shop, has not yet been stated. There is a difficulty in meeting the first cost and inevitable annual deficit, but if any other valid objection has been made to the plan it has escaped my attention. It offers every advantage of every other form of school shop, with immense additions.

The advantages of a shop in which actual construction is made to aid in instruction are numerous; a few only can be mentioned. These boys are all hoping to be engineers; at least they may expect to become skilled workmen or draftsmen. In any event, the more the faculty of judgment is cultivated, and the more the boys realize the nature and extent of the difficulties that actual practice presents, of which the best theoretical knowledge gives no hint, the nearer they are to attaining the end they seek. We have seen that no graduate of a school is an engineer, but is in the best way to become one. Why not advance him as far as possible? If now the student's comprehension of the principles of engineering is clear, and his weekly practice enables him to see those principles in action under conditions as like as possible to those which he will meet in real life, his entrance upon the life of an engineer will be an expansion of his school life, and not an abrupt transition from it to a new mode of life. The more his work is subjected to the inexorable tests of business, and the more he feels in the use of his materials just the same responsibility that rests upon an actual workman, the better he is. He must make the things that are to be used, and not those contrived to suit the peculiarities of his temperament, the exigencies of his situation, or the mere purpose of instruction. There is nothing that a student needs to make in a school workshop from which he can not gain something if he puts the article into its final serviceable form.

Applying the stern test of serviceableness is the only way to know whether the things that have been made were worth the making or not, and is the only way to correct any tendency to visionary structure that is so apt to infect a school workshop, and to prevent that sublimation of common sense which is apt to ensue when responsibility for the correct use of costly materials is removed.

There is no merit or charm in work, considered merely as work; to work to produce something that some one else

wants and can not make for himself, and is able to pay for, is the stimulus of industry. All work in school shops or any other will ultimately obey this law, or else it will evaporate into exercise or sport.

Workshops into which the principle of construction does not enter are liable to exalt the importance of the purely literary aspect of mechanical knowledge. It is possible to know the five hundred and seven mechanical movements, to know the best cutting angles of saws, files, and edge tools, and not be a mechanic or be in the way of becoming one. This kind of knowledge is useful and attractive and desirable when it is not offered as a substitute for the dexterity that can be obtained only by the use of the tools. It will not do to regard our ancestors, the skilled mechanics, as fools. There is still but one way to learn to file, and that is to file. The most expert filer I ever saw could not write his name. I do not think he could have filed any better had this simple accomplishment been added to his merits; he would have been a better and a happier and a more useful man with more knowledge, but he did that one thing as well as it could be done at that time.

But this thought instantly suggests another of the greatest importance, viz.: handicraft occupies a constantly narrowing place in the mechanic arts; machinery a constantly widening one. Every year adds to the number of trades from which the machinist has driven the craftsman. It is clear, then, that no training of boys for the life of mechanics is complete which does not make them familiar with machinery and machine construction.

There is one demand sometimes made upon the school shop which is unjust, namely, that it should pay its way. How can it pay its way when so large a part of its force is spent in teaching boys? If so many machine shops in this country, fitted up and managed with especial reference to money making, fail in business, or only make the ends meet by the most painful efforts, how can a shop one-half of

whose effective force is spent in teaching boys, who can not for the first half of their time produce anything salable, hope to pay its way? Teaching in school shops costs as teaching elsewhere costs.

In the Rose School the following plan will be attempted :

1. The course of study will be four years.
2. The practice will be concentrated in the first year and diminished in the fourth, so as to allow time for more instruction in machine design.
3. While the same subjects will be taught, perhaps more attention will be given to the humanities.
4. A different view will be taken here of the profession of civil engineering from the one usually held. The young men who propose to be civil engineers will spend a part of their practice time in the machine shop.

Civil engineering can not easily be separated from mechanical, because the most important business of a civil engineer nowadays is not surveying and mapping, but bridge and building construction, the setting of water-wheels and other engines, and such like undertakings which involve a knowledge of mechanics, so that two or three of the best so-called civil engineers in the country have given it as their judgment that a course in mechanics, including workshop instruction, is the best way to prepare for the practice of civil engineering.

But, on the other hand, the building of new highways and railroads still goes on, and calls for a certain number of young men who are expert in the use of the transit and level (especially in railroad problems), who know how to draw and who understand mensuration; hence, training for this sort of employment can not be neglected in a polytechnic school. It would conduce to clearness to call such work topographical engineering.

An added consideration of some weight in favor of retaining a distinct department of topographical engineering is, that many of the young men who frequent technological

schools have no taste or aptitude for mechanical work, and some have not the requisite physical vigor for it, whose fitness for success in field work or in mapping is unquestionable. But it will be clearly advantageous to all to have some workshop practice. No changes will be made except such as reason and a large experience show to be desirable and advantageous to the student.

But a healthy child wants food. An adequate beginning must be sustained by continual contributions in order to good progress. We want the sympathy and patient consideration of the community. We want books, apparatus, and models constantly in excess of the resources of our funds. The examples of our founder are worthy of attention and imitation.

The machine shop is ready; a reference library will soon be on the shelves; a cabinet of minerals is on hand; ample models are ready for the proper equipment of rooms for drawing and design; the bricks for a new building for a chemical laboratory are now lying in the yard; apparatus for chemistry, physics, and field work is in the building or provided for; commodious recitation and lecture rooms are ready when wanted.

I hope also, in the course of time, to collect models and examples of the best mechanical devices, and also of leading manufactures. These collections of models play a very important part in European technological schools, and for obvious reasons. Indeed, the outlay in some cases is enormous and would be insupportable did not manufacturers find their account in placing here examples of their best work. At Chemnitz I saw two examples of this class: one a perfect working model of the Hartman locomotive, which cost \$3,000, and the other a large working model of the Merkel stationary engine, worth \$250 — each presented by the manufacturer.

In order to any effective use of these resources two things are vitally requisite: good teaching before the stu-

dents enter the Institute and good teaching afterward. It is, on the whole, a mistake to suppose that fitting for the polytechnic is essentially different from fitting for any form of manly labor in this world which depends upon a sound, instructed brain. Technically, boys will be examined for the present in English grammar, geography, United States history, arithmetic, and algebra as far as quadratic equations; but these are the essentials of any success at all in the polytechnic; the more a boy knows before he comes, the broader and deeper his success will be. The polytechnic is a professional school, and must concentrate itself upon its own special work; but the broader the base upon which it builds, the more massive the structure that can be reared. Whether the polytechnic course shall rear an obelisk or a pyramid depends on the preparation of its students.

Men are born as ignorant as they ever were, and the same steps from ignorance to the elements of all knowledge must be taken by every one. This work usually occupies the first fifteen years of every human life.

It is very desirable that every boy who presents himself for admission here should have at least a full high school course; if he can not get that, let him make the closest possible approach to it. Youth once passed, the opportunity for acquiring the rudiments of knowledge is usually gone forever. And eye hath not yet seen nor ear heard a sadder thing than the lament of a man who, amid the emergencies of life, suddenly confronts his need of some simple knowledge which he might have got for the asking in his youth.

The greatest solicitude will be ever cherished here about the quality of the teaching. It is not intended that students shall find more assiduous or competent teaching in the various branches of the course than will be constantly found in this Institute.

But there is one peril and annoyance to which the new polytechnic is subject: handicraft in school, never having been used before except for reformatory purposes, the im-

pression gets abroad that the institution must lower its intellectual standing to raise the handicraft. I do not know an institution in this country except West Point where boys achieve as much good work or are better prepared intellectually for effective service as engineers than they are at Worcester. We propose to give the same training here.

If what has now been said seems to have a too exclusive bearing upon the study and practice of mechanics, it is because this is the leading department, and presents the only novel and difficult features of our enterprise; but there will be departments of civil engineering, physics, chemistry, and design organized on the same general plan; the studies will be the same in all departments—the practice different according to the purpose for which it is intended. These departments naturally group themselves; for chemistry, physics, and drawing must be taught to mechanics, and the additional expense required to give practice in each of these departments to those who prefer it to mechanical practice is justified by the demand.

Later in our enterprise a department of mining engineering may be organized; and in the department of physics special attention will be given to electrical engineering. All this will come about in due time. It will be observed, however, that only one kind of practice can be profitably taken by any student during the course. Full particulars in regard to all these matters will be seasonably given.

If this account of the origin and method of the technological school be correct, it is obvious that it is no longer an experiment, that it fills a gap, that it is a natural, inevitable, every way desirable and welcome concomitant of modern civilization. It does for the industrial arts what the colleges have so well done for the learned professions by fitting men in a carefully planned course of study for the intelligent discharge of their duties.

The polytechnic seeks to work as an ally of the old classical college, and hopes that her old friend may find

something to her advantage in studying the economy of force which prevails in the methods and results of the new-comer. The polytechnic does not sustain any organic relation to the college such as the academy has on the one hand and the professional school on the other; yet in a deeper sense it sustains a very important relation to it. Whatever tends to increase or foster the desire for knowledge tends at once to foster all institutions whose object is to promote knowledge. Every new institution tends to increase the interest in the old—provided the old are worthy. Of course, I do not mean by “new institutions” repetitions of old types, such as the multiplication of small colleges, for this is generally an evil rather than a good (except in new States), but I mean new institutions, like polytechnic schools, that strike their roots into new soils and make what was once a desert blossom as the rose.

Technical schools have not affected the colleges unfavorably in the matter of attendance; for, in spite of the crowds that have flocked to their doors, the classes in the colleges have steadily increased. More new colleges have been founded during the period of the rise of polytechnic schools in this country than in any similar period before; the old colleges have received munificent increase in their resources and have more than held their own in the matter of attendance, and all the students attending the State universities in the course of liberal arts may be reckoned as a solid addition to the ranks of the college.

For obvious reasons the polytechnic school flourishes best when separate and distinct from the college; but the more it flourishes the more it will directly benefit the college by providing for the instruction of the youth who demand the so-called “practical courses,” and thus leave the college free to pursue her own legitimate work. Toward all forms of knowledge technology is hospitable, and toward all who know, engineers are affectionate. The study of science in a teachable and reverent spirit does not beget intolerance or

bigotry. Science inculcates hatred of pretense, and is intolerant of dogmatism; but, mindful of the counsel of her greatest discipline, she utters the solemn words of Bacon:

“This also we humbly beg that human beings may not prejudice such as are divine, neither that from the unlocking of the gates of sense, and the kindling of a greater light, anything of incredulity or intellectual night may arise in our mind toward Divine mysteries.”

The day has forever passed when the old idea that the study of Latin, Greek, and the humanities is the only education. The definition of an educated man will bear still more expansion, but it has broadened rapidly during the last quarter century. * “The vulgar argument that a study of the classics is necessary to make a gentleman is beneath contempt. Honor and gentleness are not a dye or a lacquer, but warp and woof. It is true that a certain social consideration attaches to persons who are supposed to know Latin or Greek, whether they are gentlemen or not”; but society is rapidly adapting itself to the new era in which men and women are to be taken for what they are, and not what they are said to be.

It is an unique and interesting fact that most of the polytechnic schools have been founded and endowed by private benefactors. The colleges, seminaries, and academies have depended at times upon legislative fostering. Hardly a session of a State legislature passed prior to 1873 without considering some bill in aid of an educational institution. But the strong point about polytechnic schools is, that the enormous expense of founding and administering them has been provided in most cases by individual citizens who knew their value. The *Ecole Centrale* in Paris, next to the Polytechnic the best in France, was the joint product of the brains of Dumas, Pictet, and Ollivier and the pocket of their friend Lavallee, who paid all the expenses of start-

* President Eliot.

ing and running the school for five years, and at the end of that time presented it to the government. In this country Lawrence at Cambridge, Van Rensselaer at Troy, Sheffield at New Haven, Stevens at Hoboken, Boynton, Washburn, and Salisbury at Worcester, Rose at Terre Haute, Case at Cleveland, and many others, have said in tones which many generations will hear what they think of the value and importance of technical education, and have made the State the recipient and not the nurse of their bounty.

In the city of Glasgow, nothing impresses a traveler more amid all its teeming industries than two monuments, one of great height and majesty to John Knox, the other a simple tablet in the wall of the cathedral to the memory of George Bailey, who founded unsectarian schools and libraries for the operative classes.

The city of Terre Haute will cherish none of her treasures longer than the memory of her princely benefactor; but her choicest heritage is the inalienable right to put upon his monument with a change of name the inscription which can be read at the grave of Copernicus in Warschau:

TO CHAUNCEY ROSE, OUR FELLOW CITIZEN.

BOARD OF MANAGERS.

COLONEL WILLIAM K. EDWARDS.

Colonel W. K. Edwards was born near Zanesville, Ky., in 1820, and died in his room in the Terre Haute House September 26, 1878. He was a graduate of the Indiana State University and the Transylvania University of Lexington, Ky. In 1843 he came to Terre Haute and began the practice of the law. He took an active interest in public affairs, and was several times elected to the State Legislature, serving one term as Speaker. He was the first Mayor of Terre Haute, under city organization. He was associated with the management of the T. H. & I. and T. H. & E. Railroads and with banking interests. He was Trustee of the Indiana State University, and at the time of his death President of the Board. In all public affairs he was active and influential.

For many years Colonel Edwards was the agent, attorney, and trusted friend of the founder of the Polytechnic Institute. Mr. Rose consulted him almost daily on business matters, and he was his chosen instrument for such investigations as were needed in reference to contemplated benefactions. When his advancing years admonished him that he must restrict his business activities, he began with increasing interest to turn his attention to formulating plans for so disposing of his fortune that it might prove of the greatest benefit to the community in which it was acquired and to the people and their descendants among whom he had lived as neighbor and friend, he discussed his plans with Colonel Edwards and directed him to secure such information and do such work as it required. Colonel Edwards was,

in fact, Mr. Rose's business agent in many matters, chiefly of this sort, and it is to be said to his credit that he served the master spirit with such fidelity and ability as to always retain the confidence and esteem of his elder friend. He was present at most of the conferences in the historic library office room of the Rose home, when the matters of founding a scientific school and an orphans' home and a free dispensary were maturing, and was a member of the Polytechnic Board from the first until his death. Every task assigned to him in this connection he executed with fidelity.

Colonel Edwards was a man of varied interests. In addition to his professional duties and public positions, he was for many years an active and influential member of the Independent Order of Odd Fellows, filling in turn all the offices in the local lodge, and holding many high places in the Grand Lodge and Encampment. On the occasion of his funeral, Sunday, September 29, 1878, there was a notable gathering of representative and distinguished men from all over Indiana, who had met and served with him in some public station. In his death the Rose Polytechnic lost an earnest friend.

GENERAL CHARLES CRUFT.

General Charles Cruft, eldest son of John F. and Elizabeth A. Cruft, was born in Terre Haute, January 12, 1826. He died at his home in this city March 23, 1883.

Despite the disparity in their ages, he was an intimate friend of Chauncey Rose, who appointed him one of the original members of the Board of Managers of the Rose Polytechnic Institute, and relied greatly on his judgment in the formulation of the plans for its establishment.

Charles Cruft received his early education in Terre Haute, the latest of his boyhood instructors being Rev. Robert B. Croes, rector of St. Stephen's Church. He entered Wabash College at Crawfordsville, graduated in 1843, and in 1846 received the honorary degree of Master

of Arts. For a few months succeeding his return from college he was an assistant in the academy of the Rev. Mr. Croes.

Later he obtained a position as bookkeeper in the local branch of the old State Bank of Indiana, of which Judge Demas Deming was President. During this period he studied law, having as his preceptor the late W. D. Griswold.

After a brief period of legal practice, General Cruft was chosen President of the St. Louis, Alton & Terre Haute Railway Company, and held the position for several years. In 1861 he formed a law partnership with John P. Baird, which partnership continued until the death of Colonel Baird in 1881.

In 1860 he purchased the *Terre Haute Express*, which he owned for a number of years, though not actively engaged in its publication.

In September, 1861, he enlisted in the army, and was appointed Colonel of the Thirty-first Indiana Volunteers. He served throughout the war, and rose to the rank of Major-General.

During the closing years of his life, after the death of his partner, he retired from the active practice of his profession and devoted a large portion of his time to the Rose Polytechnic Institute, with which he had been identified from its inception, having materially assisted Mr. Rose in maturing the plans which culminated in its foundation.

SAMUEL S. EARLY.

Samuel Stockwell Early was elected a member of the Board of Managers of the Rose Polytechnic Institute November 2, 1878, to succeed William K. Edwards, deceased. He was at once elected Secretary, filling the vacancy caused by the death of his predecessor. His services, as a member and Secretary, were invaluable, and he was especially active in the difficult task of starting the Institute, making several trips East in connection with the

selection of a President and of other members of the Faculty and in securing the equipment.

Mr. Early was born at Flemingsburg, Ky., July 12, 1827, the only child of Jacob D. and Mary (Stockwell) Early. In 1833 he came to Terre Haute with his father, who, up to his death in 1869, was one of the leading business men of the town. In 1841 he was sent to Asbury University, graduating with high honors. In 1849, after a few years in his father's counting room, he went abroad, for a stay of fifteen months, devoting his time to the study of art and literature. Upon his return he engaged in business with his father. He was married in 1855 to Miss Andrews, of Baltimore, daughter of General T. P. Andrews, who became Paymaster-General during the Civil War. Mr. Early and his wife went abroad a few years afterward, and traveled extensively in Europe and Asia Minor.

For a few years he was a director and later President of the Prairie City Bank. In 1864 he was elected President of the Board of Trustees of St. Agnes Hall, a female college in Terre Haute. In 1871 he went to Baltimore, Md., and was one of the editors of the *Baltimore Bulletin*, a weekly journal devoted to literature and art, and during this period he won high distinction as a writer and art critic, and was elected a member of the American Antiquarian Society. Returning to Terre Haute to reside in 1876, he at once took a permanent position in social and business circles, though not actively engaged in business.

On his election to the Board of Managers of the Rose Polytechnic Institute, he devoted a large part of his time to furthering its interests. Up to the time of his death, which occurred suddenly September 18, 1884, he contributed largely to its success, his life work coming to an end just as the Institute began its career. One of his sons and his namesake graduated in the Class of 1885.

ROBERT S. COX.

Robert S. Cox was born at Zanesville, Ohio, February 7, 1833, and died at his home in Terre Haute November 18, 1886.

He came to Terre Haute in 1855 and entered into partnership with his father, Robert S. Cox, Sr., in the wholesale grocery business. His father died in 1864, but the business was continued as before until 1870, when it was merged into the firm of Hulman & Cox. His great executive capacity and sound views on business materially assisted in the development of this great establishment. In 1882 he bought a one-third interest in the Terre Haute Car Works, and was the directing head of that large enterprise at the time of his death.

Mr. Cox was a man of broad views on education, and his connection with the Rose Polytechnic Institute as a member of the Board of Managers enabled him to render service that was as congenial to him as it was valuable to the school. Faithful in attendance on the meetings, never missing when in the city, he brought to the discharge of the duties of the position a ripe judgment and keen interest. A son and namesake later became a member of the Board, serving until he removed from the city; and two sons, Frank P., of the Class of '87, now with the General Electric Company, of Lynn, Mass., and John S., of the Class of '91, a resident of Terre Haute, graduated from the Institute.

During the earlier portion of his extended connection with the Institute, many matters arose in regard to which there were no precedents. A comparatively new field was under exploration, the lines of education were reaching out in new directions, new problems were constantly arising and pressing for solution. On all these matters his associates relied greatly on the soundness of his judgment, a marked characteristic of his mental equipment. Though many interests claimed his attention, it was always possible to enlist his services when the welfare of the Institute was concerned.



FIRMIN NIPPERT.

FIRMIN NIPPERT.

Firmin Nippert was a trusted friend of Chauncey Rose for many years, and so, when the plans for establishing a Polytechnic Institute were under consideration, he was consulted, becoming one of the members of the original Board, organized September 10, 1874. From that time until his death, November 3, 1889, he missed no meeting of the Board when he was in town and physically able to be present. To the business in hand he brought an ardent desire to do his full duty, intense interest in the Institute, and an unflagging purpose to carry out the wishes of his friend, the founder of the school. Upon his shoulders fell much work, and it was willingly borne.

Firmin Nippert was born September 25, 1819, at Guinlange, France, one of a large family. His father, Bernard Nippert, was a teacher.

Firmin came to the United States in 1839, landing at New Orleans. For there he went to Portland, Ky. In turn he lived for a short time at Springfield, Salem, and Potoka, all in Indiana, and in 1844 came to Terre Haute, which was thereafter, until his death, his home. From 1844 to 1863 he was engaged in merchandising. Not actively engaged in business from 1863 to 1869, he went to Europe for an extended stay.

In 1869 he became connected with the nail works, and managed its affairs very successfully, continuing in the position until 1888, when he resigned and went to the Pacific Coast for a stay of several months.

Thereafter he did not actively engage in business, but devoted his time to caring for his diversified property interests and to work in behalf of the Rose Polytechnic Institute, toward which he contributed both time and money.

JOSEPHUS COLLETT.

Josephus Collett was born in Vermillion County, Indiana, a son of Stephen S. and Sarah (Groenendyke) Collett, August 17, 1832. He died in Terre Haute February 13, 1893. He attended Wabash College for three years, but was unable to complete the course owing to ill health. For a time he engaged in stock dealing, merchandising, and pork packing, in Vermilion County. But he found the occupation for which he was especially fitted when backed by Chauncey Rose; he built the Evansville, Terre Haute & Chicago Railroad from Terre Haute to Danville, Ill. This was the real beginning of his association with Mr. Rose, which grew into warm friendship and endured until the end. Mr. Collett built and managed this road until he leased it to the Chicago & Eastern Illinois road, of which it is now a part. Later he built the Genessee Valley Railroad of New York, also the Otter Creek Valley Railroad through Vigo and Clay Counties, Indiana. He served as Superintendent of the Nevada Central Railroad for two years, and became President and General Manager of a railroad in Texas. His interests in manufacturing, mining, and industrial enterprises were many and varied, and to them all he brought indefatigable industry and a comprehensive knowledge of details. Mr. Rose found in him a congenial spirit. In many mental attributes the men were alike. Mr. Rose counseled with him in regard to the proposed Scientific School, found him keenly interested, and appointed him a member of the original Board. Mr. Collett was once President of the Board of Managers under Mr. Rose's presidency, and succeeded to the presidency when Mr. Rose laid down the office shortly before his death. Mr. Collett, as President of the Board, labored in and out of season for the welfare of the school. He knew how dear it was to his dead friend, of whose estate he was one of the executors. In the erection of the buildings and in their equipment and in all the work incident to the establishment of the school



JOSEPHUS COLLETT.

he was profoundly interested, and to it he devoted a good portion of his time. Meetings of the Board were held in his office. When it came to the selection of a President and other members of the Faculty, he made several trips to the East with Mr. Early, Judge Mack, and others. Indeed, during the afternoon of his life, the Rose Polytechnic Institute seemed to interest and concern him more than his private affairs. And when he died, it was found that he had remembered it in his will, leaving it a bequest of \$75,000.

Recognition of this gift was later shown by the Board of Managers in naming the Chair of Mechanical Engineering the *Josephus Collett Chair of Mechanical Engineering*, and directing that it always thereafter be thus designated in the annual catalogues.

Geology and archæology greatly interested him for many years, and he devoted much time and many thousands of dollars to the collecting of geological and archæological specimens. This splendid cabinet, probably the finest private collection in the country, containing over 14,000 specimens, he gave to the Rose Polytechnic Institute, where it is held and where it is hoped it may be rendered more available for study when the Institute shall be able to provide it with adequate room for its proper display. Mr. Collett's name is perpetuated in Terre Haute by a park that he gave to the city, but his private benefactions were numberless, though only a fraction of them ever became known, for he was one of those rare men who do good not that they may be seen of men.

CHARLES R. PEDDLE.

Charles R. Peddle was born in Philadelphia, Pa., October 5, 1820, and died at his home in Terre Haute April 19, 1893. A portion of his youth was spent at an excellent school at Plainfield, Conn.

His early fondness was for mechanical pursuits; he was

the very type of manhood for the development of which the Rose Polytechnic was intended. Had that school been in existence, he would no doubt have availed himself of the advantages of its course. As it was, he was active in his mature life in its organization, equipment, and launching forth. He saw a son graduate, afterward to become a member of its Faculty; a daughter is Registrar of the Institute.

Denied the benefit of a professional career, such as Rose provided, for there were no such schools in that day, he began in a practical way as an apprentice in the machine shop of Norris & Son, in Philadelphia.

From there he went to Reading, Pa., and in 1849 accepted a position on Indiana's first railroad, that from Madison to Indianapolis.

April 1, 1851, he met Mr. Rose by appointment at the Astor House, New York, and at that time there began a business connection and a personal acquaintance that ripened into close friendship and continued to the end of the life of the elder man.

To Mr. Peddle was assigned the task of bringing from Boston to Indiana four locomotives, to be used in the construction and operation of the Terre Haute & Indianapolis Railroad, then building. Two of them were brought to Terre Haute by canal from Toledo; the other two by canal to Cincinnati, thence by river to Madison, and then by rail to Indianapolis.

From that time to his death Mr. Peddle was identified with the T. H. & I. Railroad, having charge of the locomotives and machinery during the road construction, and becoming Master Mechanic. Upon his judgment in all matters relating to the mechanical equipment and operation of the road Mr. Rose relied, for he realized that in him he had found a man who knew what to do and how to do it.

During the many years of their intimate business connection they came to a mutual recognition of the necessity for men mentally and physically trained for the mechanic arts.



CHARLES R. PEDDLE.

Out of these experiences grew the conferences that led to the plans for a school of industrial science. Naturally, Mr. Peddle became a member of the first Board, and had an important part in formulating and in afterward carrying out the plans. His heart was in the work, and he gave it an increasing portion of his attention, leaving nothing he could do undone. And to his faithful efforts much of its success is due.

In September, 1884, he succeeded Mr. Early as Secretary of the Board of Managers, and served in this capacity until his death. As member of the Shop Committee he gave liberally of his time to visiting it and aiding in its administration.

WILLIAM MACK.

Judge William Mack, to use the title by which he was known during the later part of his life, was born in Hamilton County, Ohio, September 29, 1827, and died in Terre Haute May 19, 1898.

His early education was received in the country schools of Butler County, his father being a farmer. Later he attended Farmers' College, then studied law at the New York State and National Law School at Ballston Springs, N. Y. He was admitted to the bar of New York in 1850, but afterward attended the Cambridge Law School.

He first located in 1851 at Grand Rapids, Mich., but after a few months removed to Columbus, Ind., then to Bloomfield, from which town he moved to Terre Haute, his residence until his death.

He became one of the foremost members of the bar, and served with honor and distinction as Judge of the Circuit Court.

Elected to the State Legislature, he became Speaker of that body. He was a public-spirited citizen, active in all affairs of general interest, and spent much time in Europe.

Fond of literature, he was instrumental in organizing the

Terre Haute Literary Club, and continued to be one of its most active members. In October, 1877, he became a member of the Board of Managers of the Rose Polytechnic Institute, succeeding Mr. Rose. From that time until his death he identified himself thoroughly with its interests.

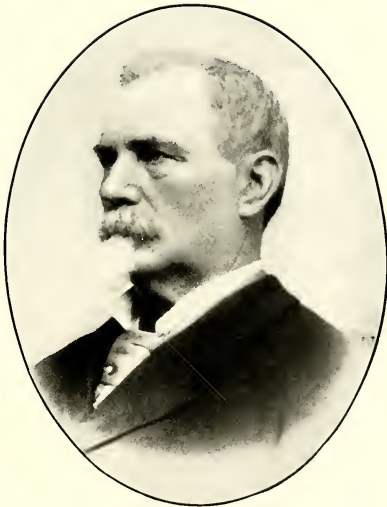
No meeting ever was held that did not record him present if he was in the city. Several times he was one of those who visited other institutions and individuals in the difficult work of securing the men who were to constitute the Faculty. At all times and on all occasions he visited the school, became acquainted with the students, and concerned himself in their welfare.

Up to the very end the Rose Polytechnic Institute was near and dear to him, and to him much of its early success was due.

RICHARD WIGGINTON THOMPSON.

Richard W. Thompson was born June 9, 1809, in Culpeper County, Virginia, and died at his home in Terre Haute, February 9, 1900.

His early education was obtained in the schools of the neighborhood, but his father's home was frequented by the prominent men of the time, and there a fondness for public affairs and history and the law was early acquired. At an early age he made a trip on horseback to Tennessee, and later, on arriving at his majority, he went to Louisville, and from there to Bedford, Ind., where he clerked in a store, taught school, studied law, and entered into practice. During the thirteen years of his residence in Bedford he was elected a member of the lower branch of the Legislature twice and of the State Senate once, and was elected to and served one term in Congress with great credit. At the expiration of his term in Congress, he moved in 1843 to Terre Haute, which was ever thereafter his home. In 1847 he was again elected to Congress. Among his colleagues was Abraham Lincoln. Although actively participating in every



WILLIAM MACK.

political contest, both in Indiana and other States (for his fame as an orator was national), he never thereafter permitted his friends to nominate him for an active political office. His marked preference, so far as he was personally concerned, was for private life.

But it is known that he declined a tender of the appointment as Secretary of State, later that of Minister to Austria by President Taylor, of General Solicitor of the Land Office by President Fillmore, of Judge of the Court of Claims by President Lincoln, a life position, and of Examiner of the Central Railroad. Indeed, he expended more effort to keep out of office than most men do to get office, so decided was his preference for private life.

At the outbreak of the Civil War he was much in Washington and at the State Capital in conference with President Lincoln and Governor Morton. His law practice was laid aside and he accepted an appointment; was Provost Marshal, and organized and drilled the Seventy-first, Eighty-fifth, and Ninety-seventh Regiments at Camp *Dick Thompson*.

After the close of the war he served as Collector of Internal Revenue and Judge of the Circuit Court by appointment.

At a still later period he was Secretary of the Navy in the Cabinet of President Hayes, resigning a few months before the close of the administration to accept the chairmanship of the American Committee of the Panama Canal Company.

For a period of twenty-five years he was General Counsel of the T. H. & I. Railroad, continuing with it after it became merged into the Vandalia System, under the presidency of his lifelong friend, William R. McKeen.

Colonel Thompson, as he was called for many years, was an omnivorous but discriminating reader, and became a writer of notable books on politics and religion. His book of Reminiscences is a valuable contribution to the history of the country.

Early in his career in Terre Haute he became associated with Mr. Rose, and the intimacy was close and cordial; and of all the high positions he held, it is doubtful if he prized any more than his membership on the Board of Managers of the Rose Polytechnic Institute, of which he was President at the time of his death. He was profoundly interested in everything that concerned the young. Doing things for them seemed to renew his youth, and he devoted to his duties in connection with the Polytechnic, as well as to those of the Rose Orphans' Home, and of the State Normal School, of which he was at one time a trustee, a very large part of his time. He always attended the Commencement exercises, and his eloquent words in addressing the students will be long remembered by those whose large privilege it was to hear him.

His death was a loss to the community, the commonwealth, and the country.

WILLIAM A. JONES.

William A. Jones was the first President of the Indiana State Normal School. Under his direction the curriculum of that school for the training of teachers was mapped out and put in successful operation. While engaged in the work he made the acquaintance of Mr. Rose, and so strongly was the latter impressed with the character and attainments of Mr. Jones that when he came to formulate the plans for the Polytechnic he wanted him to become one of the original Board of Managers. In this capacity he served with characteristic energy and ability. But before the Polytechnic received its first students, Mr. Jones, owing to failing health, felt compelled to resign the presidency of the Normal School. He then went to Iowa, where several years afterward he died.

BARNABAS C. HOBBS.

Barnabas C. Hobbs was born near Salem, Washington County, Indiana, October 4, 1815, and died at Bloomingdale, Parke County, Indiana, June 22, 1892.

His early education was received in the schools of the neighborhood, and especially at the County Seminary. Later, going to the Cincinnati College, he received instruction in mathematics under Prof. C. M. Mitchell, the eminent geographer. He taught school at Mt. Pleasant, Ohio, and at Richmond, Ind. In 1847 he became Superintendent of the school established by the Society of Friends, of which he was a member, at Richmond. This school later became Earlham College. He moved to Parke County, Indiana, April 8, 1851, and entered upon his duties as President of Bloomingdale Academy, which he held for more than fifteen years. Upon the establishment of the State Normal School in 1865, he was appointed one of the Trustees. In 1866 he became President of Earlham College, and in 1868 was elected State Superintendent of Public Instruction. For many years he was an intimate friend of Mr. Rose, who conferred with him in regard to many matters and who appointed him a member of the original Board of Managers of the school, now known as the Rose Polytechnic Institute. His long connection with educational institutions made his services very valuable, and it was with great regret that his removal from this part of the State made it necessary for him to discontinue his membership.

ALUMNI REPRESENTATIVES.

The Alumni of the Rose Polytechnic Institute have ever shown themselves enthusiastically loyal to its interests. This loyalty has found expression in manifold ways and on every proper occasion. At the Commencement exercises, and especially at the Alumni banquets, it led to the desire to assist those in charge and finally to the suggestion that the

Alumni be given special representation on the Board of Managers.

The articles of association having been suitably modified, this finally took form, and at the meeting of June 24, 1898, the following amendments to the by-laws of the articles of incorporation were adopted and spread on record.

AMENDED BY-LAWS.

Resolved, That the Board of Managers increase its membership so that there shall be two more members than at the present time, and that provision be made whereby the two vacancies thus created shall be filled by the Rose Polytechnic Alumni Association in the following manner:

1. That the said Association shall nominate Alumni of at least four years' standing, by ballot, two each for terms of one and two years respectively, the term of each nominee to be particularly specified, and the said terms to expire at the end of Commencement week at the end of said term.

2. That no two of the persons so nominated shall be of the same class unless nominated for the same year, and that the said persons shall represent at least two of the five engineering courses offered by the institution.

3. That all Alumni shall have the privilege of voting for the nominees provided for the first article, either in person or by letter ballot.

4. That after the first two Managers are so nominated by the Association and elected by the Board, the successors of said two Managers shall be appointed for a term of two years, one each year, in the following manner:

(a) A committee of three on election shall be appointed by the Association, said committee being composed of Alumni living in or near Terre Haute.

(b) It shall be the duty of said committee, during the month of March of each year, to notify each Alumnus by letter and request him to make one nomination for the vacancy, which will occur at the end of the following Commencement week.

(c) On the 15th day of May, or the week following said day, the committee shall count the ballots received by them, and shall select for the nominees the two persons receiving the highest number of votes, and shall arrange the names of said two persons in order according to the number of votes received by each, placing the highest first, provided always that each of the said two persons shall have

been an Alumnus of at least four years' standing at the Commencement following the nomination. When the list has been prepared, a copy thereof shall be forwarded to each Alumnus with the request that he vote for one of the persons named therein, either by personal vote or by letter ballot, on or before the day of the annual meeting of the Association, said day to be designated in the notice.

(d) The poll shall be closed at the opening of the annual business meeting of the Association, and it shall be the duty of the election committee to count the votes, and certify the name of the person receiving the greatest number of votes to the Secretary of the Association, who shall then certify the same to the Board of Managers.

(e) The Board of Managers to agree, except for some good and sufficient reason to be formally set forth in writing to the Secretary of the Alumni Association, to elect the person so certified to membership on the Board.

(f) Any person so nominated by the Association and elected by the Board may be renominated and reelected for a second term of two years, but no person so nominated and elected shall serve as an Alumni representative on the Board of Managers for more than two successive terms of two years each."

In accordance with the provisions and amended by-laws the Alumni Association, the ensuing year, held an election, and June 16, 1889, its Secretary, John B. Aikman, of the Class of 1887, himself a member of the Board of Managers, reported the election of Benjamin McKeen, '85, of St. Louis, for the two-year term, and Victor K. Hendricks, '89, of St. Louis, for the one-year term, which action was at once confirmed. June 22, 1900, Victor K. Hendricks, '89, was reelected. Other elections occurring in June each year were as follows:

- June, 1901, W. Arnold Layman, '92, of St. Louis.
- June, 1902, Frederick F. Hildreth, '94, Terre Haute.
- June, 1903, W. Arnold Layman, '92, St. Louis.
- June, 1904, Herbert Foltz, '86, Indianapolis.
- June, 1905, Theodore L. Condron, '90, Chicago.
- June, 1906, Herbert Foltz, '86, Indianapolis.
- June, 1907, Arthur M. Hood, '93, Indianapolis.
- June, 1908, W. E. Burk, '96, Louisville, Ky.

ROSTER OF THE BOARD OF MANAGERS.

SEPTEMBER 10, 1874-1909.

PRESIDENTS.

Chauncey Rose, Terre Haute....from Sept. 10, 1874, to June, 1877
 Josephus Collett, Terre Haute....from June, 1877, to February, 1893
 R. W. Thompson, Terre Haute...from March, 1893, to March, 1900
 William C. Ball, Terre Haute.....from June, 1900

VICE-PRESIDENTS.

Josephus Collett, Terre Haute, from September, 1874, to June, 1877
 Charles R. Peddle, Terre Haute, from June, 1877, to October, 1884
 R. W. Thompson, Terre Haute....from April, 1885, to March, 1893
 William Mack, Terre Haute.....from June, 1893, to May, 1898
 William C. Ball, Terre Haute.....from May, 1898, to June, 1900

TREASURER.

Demas Deming, Terre Haute.....from Sept. 10, 1874

SECRETARIES.

Wm. K. Edwards, Terre Haute, from Sept. 10, 1874, to Sept., 1878
 Samuel S. Early, Terre Haute.....from Nov., 1878, to Sept., 1884
 Charles R. Peddle, Terre Haute, from October, 1884, to April, 1893
 R. G. Jenckes, Terre Haute.....from April, 1893, to June, 1900
 John B. Aikman, Terre Haute.....from June, 1900, to June, 1902
 George M. Crane, Terre Haute.....from June, 1902

MEMBERS.

Chauncey Rose, Terre Haute....from Sept. 10, 1874, to June, 1877
 Charles R. Peddle, Terre Haute....from Sept., 1874, to April, 1893
 William A. Jones, Terre Haute....from Sept., 1874, to March, 1883
 Josephus Collett, Terre Haute.....from Sept., 1874, to Feb'y, 1893
 Barnabas C. Hobbs, Bloomingdale...from Sept., 1874, to June, 1878
 Demas Deming, Terre Haute.....from September, 1874

Firmin Nippert, Terre Haute.....	from Sept., 1874, to Nov., 1889
Ray G. Jenckes,* Terre Haute... .	from Sept., 1874, to Jan'y, 1879
Charles Cruft, Terre Haute.....	from Sept., 1874, to Sept., 1878
Wm. K. Edwards, Terre Haute.....	from Sept., 1874, to Sept., 1878
William Mack, Terre Haute.....	from Oct. 17, 1877, to May, 1898
Samuel S. Early, Terre Haute....	from Nov. 2, 1878, to Sept., 1884
Robert S. Cox, Terre Haute.....	from Jan. 31, 1879, to Nov., 1886
Preston Hussey, Terre Haute.....	from Jan. 31, 1879
R. W. Thompson, Terre Haute,	from March 31, 1883, to March, 1900
William C. Ball, Terre Haute.....	from March 31, 1883
Leslie D. Thomas, Terre Haute,	from March 17, 1888, to June, 1895
W. S. Rea, Terre Haute.....	from March 7, 1893
Robert S. Cox, Terre Haute....	from April 25, 1893, to June, 1899
H. I. Miller, Terre Haute.....	from April 8, 1898, to June, 1901
John B. Aikman, Terre Haute.....	from April 8, 1898
George M. Crane, Terre Haute.....	from Oct. 12, 1901
Samuel S. Early, Terre Haute....	from Oct. 12, 1901, to June, 1905
W. S. Roney, Terre Haute.....	from Oct. 12, 1901, to June, 1907
James S. Royse, Terre Haute.....	from June 10, 1908
Charles Minshall, Terre Haute.....	from June 10, 1908

Of the ten members, including Mr. Rose, constituting the first Board of Managers, all are dead save two. Mr. Demas Deming, President of the First National Bank, one of the original Board, was selected by Mr. Rose himself to be the Treasurer, and during all these years has managed the finances of the Institute with rare fidelity and ability, keeping the endowment funds safely and profitably invested and looking after the vast amount of details.

COMMITTEES OF THE BOARD.

Committee on Shops—Aikman, Hood, and Jenckes.

Library Committee—Minshall, Deming, and Ball.

Finance Committee—Deming, Hussey, and Jenckes.

Committee on Buildings and Grounds—Rea, Burke, and Aikman.

Auditing Committee—Royse, Rea, and Crane.

Committee on Faculty and Discipline—Royse, Crane, and Ball.

*Mr. R. G. Jenckes resigned from the Board on his removal from the city in 1879, and on his return was reelected March, 1893.

PAST PRESIDENTS.

CHARLES OLIVER THOMPSON, A.M., PH.D.

FIRST PRESIDENT.

Charles Oliver Thompson, A.M., Ph.D., who entered formally into the office of President of the Rose Polytechnic Institute on the 7th of March, 1883, was born September 25, 1836, in East Windsor, Conn., where his father, William Thompson, D.D., was then professor in a Connecticut Theological Seminary. He was fitted for College in the East Windsor Academy, and entered Dartmouth College in 1854, graduating in 1858.

He attained high standing in the College, with special proficiency in the departments of chemistry and mechanical philosophy. He received his degree of Master of Arts in 1861 and Doctor of Philosophy in 1870.

Teaching was evidently Dr. Thompson's "destined end and way"; for, while yet a pupil in Windsor Academy, he received an apprenticeship in the district schools of his neighborhood for two winters, and this teaching he continued, as occasion offered, until the completion of his college course.

In September, 1858, he became Principal of Peacham Academy, in Vermont, and continued till November, 1864, with an interval of some months, which were devoted to practical work as surveyor and engineer. In 1864 he was called to inaugurate the conversion of the Old Cotting Academy of Arlington into the Cotting Public High School, continuing there until February, 1868, when he was elected Principal of the Worcester Free Institute of Industrial Science. Besides filling the duties of Professor of Chemistry, he was charged with the inauguration of a scientific



C. O. THOMPSON.

and practical course of instruction, which had then no recognized type or model in this country.

But before entering on his duties of this position he spent eight months in visiting institutions in Europe having the same general aims.

Entering on his duties as President of the Worcester Free Institute of Industrial Science in November, 1868, he soon brought it into prominence as one of the leading institutions of its class.

It required persistent persuasion on the part of the Board of Managers of the Rose Polytechnic Institute then in search of a President to induce him to take charge of this new Indiana school. In all the preliminary negotiations leading up to his election and acceptance of the presidency of the Rose Polytechnic Institute, Professor Thompson's advice to the Board of Managers in regard to the opening of the Institute and the scope of its work was found invaluable.

Acting on his advice, the Board had followed his directions, so that when he came here, March 7, 1883, he found things much as he had planned, and was able to take up and carry on the work thus auspiciously begun. Classes had entered, and under his skillful directions instruction was begun.

With intense activity he plunged into the difficult duties of his position. His whole thought was of the school and its future. Keenly alive to the responsibilities he had assumed, he labored at his task with an energy that overtaxed his strength.

So, at the beginning of his career, which was rich in promise of results, he was suddenly stricken ill, and almost before his family or friends realized the seriousness of his condition, he died in the early morning of March 17, 1885.

Though during his mature life actively engaged in educational work, he yet found time to write a long list of reports and papers which are recognized as authorities on

the subjects treated, and will keep alive his name and fame. In his death the Rose Polytechnic Institute sustained a very serious loss, as did the cause of education.

Fittingly at the ensuing Commencement exercises special memorial exercises were held in his honor. General John B. Eaton, United States Commissioner of Education, on invitation of the Board of Managers, was present, and delivered an extended and scholarly tribute to his memory.

General Eaton had known President Thompson long and well, and his address was an eloquent tribute to his worth and work.

On Wednesday, March 7, 1883, General Eaton had delivered an address at the inauguration exercises when his friend had assumed formal control of the school. It was a pathetic circumstance that only a little over two years thereafter, standing in the same chapel, he paid tribute to the memory of his dead friend.

THOS. CORWIN MENDENHALL, PH.D., LL.D., Sc.D.

SECOND PRESIDENT.

Assumed the duties of President in September, 1886, and served until June, 1889. For several years thereafter he still acted in an advisory capacity through an interim when the Institute was supplied only by Acting Presidents. He was born in Hanoverton, Ohio, October 4, 1841. In 1868 began his career as teacher in the public schools of Columbus, Ohio, and in 1870 was made Professor of Physical Science in the Columbus High School, where he served until 1873, when he was selected as Professor of Physics in the Ohio State University, then known as the State Agricultural and Mechanical College, serving until 1878. In 1878 was selected as Professor of Physics in Imperial University of Japan at Tokio. He returned to the States in 1881, and again served in the Ohio State University until 1884, when he was selected to the position of Chief of the United States Signal Corps at Washington, D. C., remaining until 1886.



T. C. MENDENHALL.

As stated above, from 1886 to 1889 served as President of Rose, resigning to follow a call of the President of the United States to become Superintendent of the United States Coast and Geodetic Survey, where he remained until 1894, when he again returned to active educational work by accepting the presidency of the Worcester Polytechnic Institute at Worcester, Mass., remaining until 1901, when, because of failing health, he resigned. Since then he has been living in Europe. Though not physically able to carry the responsibilities and cares associated with active participation in educational affairs and scientific work, he continues to take great interest in them. He has by correspondence shown the Institute and its Alumni how affectionately he remembers them. He has by wise counsel helped in the solution of many problems affecting its welfare. He reads and studies continually, and all who have been privileged to greet him in foreign lands, where he has found it best to sojourn because of his health, have been permitted to share the results of his studies and to enjoy the stimulating and elevating influence of a clear mind and a great heart.

During the period of his Government service was also Superintendent of Weights and Measures and member United States Lighthouse Board, member Behring Sea Commission, Alaska Boundary Commission, and Chairman Massachusetts Highway Commission. He was awarded a gold medal at the Paris Exposition in 1900, and one by the American Geographical Society in 1901 for work done in seismology and terrestrial gravity and chartography. He received degree of Ph.D. from the Ohio State University, degree LL.B. from Michigan, and Sc.D. from Rose. He was a delegate to the International Electrical Congress, member of the National Academy, F. A. A. S, Philosophical Society, American Academy, Antiquarian Society, Honorary Fellow National Geographical Society, American Geographical Society, Massachusetts Historical Society. Honorary Fellow Franklin Institute, etc. In all the various

activities which the above record shows, Dr. Mendenhall left his imprint upon the work he undertook. As scientist he ranks among the first. As organizer and administrator his record is equal to that of the best, and yet those who have known him intimately and have been associated with him recognize that perhaps his greatest and most enduring work was along educational lines. While engaged in purely scientific and research work in the laboratories of the Universities and the Government, he still remained active as an educator.

All who are familiar with the educational activity in the Central West, and even in the East, still see the impress of his work, which he has left in common schools, high schools, and colleges. Year after year he devoted much time to instruction in teachers' institutes through Ohio and Indiana, and was frequently called East. His work in giving instruction in physical science, and making of it a real, live subject in high schools and colleges, is pioneer. As a popular scientific lecturer he has had no peer. His wonderful faculty in presenting scientific subjects in such a way that they could be grasped and comprehended by those who had not made of them a special study, was remarkable. In colleges and universities, however, his versatility, his ability as organizer and teacher, was most marked. He had a happy faculty of going to the heart of things by the most direct course, and in so doing compelled the admiration and affection of all with whom he came in contact. At Rose evidence of this appreciation and affection was shown by the preparation and presentation to him of a bronze tablet setting forth the estimate in which he is held by the students. When he resigned to enter into Government service, the Faculty, the Board of Managers, and all friends of the Institute felt that when he left, a tower of strength was taken away from the Institute.

During his administration the growth of the Institute was most rapid, and to his broad views, organizing ability,



HENRY T. EDDY.

and wisdom may be attributed, in large measure, the standing which the Institute holds among technical colleges and schools.

HENRY TURNER EDDY, A.M., PH.D., LL.D.

THIRD PRESIDENT.

Dr. Eddy assumed the duties of President in January, 1891, and served until September, 1894. He was born in Stoughton, Mass., June 9, 1844, and graduated from Yale with degree of A.B. in 1867, received the degree of Ph.B. in 1868, A.M. in 1870, C.E. in 1870, and Ph.D. in 1872 from Cornell, and LL.D. from Center College in 1892. The years from 1879 to 1880 he spent in study in Berlin and Paris. In 1867 and 1868 was Instructor in Field Work Sheffield Scientific College. In 1868 and 1869 was Instructor in Latin and Mathematics in University of Tennessee. Assistant Professor in Mathematics and Civil Engineering Cornell, from 1869 to 1873, and Adjunct Professor in Mathematics in Princeton from 1873 to 1874. Professor of Mathematics, Astronomy, and Civil Engineering University of Cincinnati from 1874 to 1890. Was Dean of the Faculty of the University of Cincinnati from 1874 to 1877 and 1884 to 1889, and President in 1890. Served from 1891 to 1894 as President of the Rose Polytechnic Institute, when he resigned and accepted the position of Professor of Engineering and Mechanics in the University of Minnesota.

Since 1906 has been also Dean of the graduate school of Engineering of that University. He is a member of the American Philosophical Society, of the American Mathematical Society, the American Physical Society, the A. A. A. S., and other educational and learned societies. Dr. Eddy is author of a number of text-books both in pure and applied mathematics.

He has especially distinguished himself in investigations in graphical statics. Dr. Eddy brought to the Institute ripe

experience in teaching and administration. From this experience the Institute benefited. He took up the work of his predecessors, and without radical change in organization or plans made such changes in the course of instruction and the work of the Institute as strengthened it and kept it abreast of the demands of the times. The large classes and the constant growth in attendance presented problems which he met successfully, and during his administration it may well be said that the institution continued to prosper. Upon his resignation Dr. Eddy carried with him the respect and good will of all who were associated with him either as co-workers or students.

THOMAS GRAY, B.S., PH.D.

VICE-PRESIDENT AND JOSEPHUS COLLETT PROFESSOR OF
DYNAMIC ENGINEERING.

Thomas Gray, first Professor of Dynamic Engineering, served from September, 1888, to the time of his death, December 19, 1908. He was born February 4, 1850, in Lochgelly Fifeshire, Scotland, and received his primary education in the schools of that district. He was apprenticed in handicraft for several years, and entered the University of Glasgow, graduated in 1878 as B.Sc. in engineering. He became experimental scholar under Lord Kelvin, then Sir William Thomson. While in the University he gained many distinctions in the classes of engineering and mathematics, receiving several prizes. Shortly after graduation he was awarded the Cleland Gold Medal of the University for "An Experimental Determination of Magnetic Moments in Absolute Measurements."

In 1879 he was Professor of Telegraph Engineering and Demonstrator in the Physical Laboratories in the Imperial University of Tokio, Japan. He had as colleagues Ayrton, Perry, Milne, and Dyer. He contributed a number of



THOMAS GRAY.

papers, during this period, to the Royal Societies of London and Edinburgh and a number of papers to the philosophical magazines. The first papers were upon experimental work in Heat and Electricity.

While in Japan he became interested in Seismology. Wrote a number of papers on Earthquakes and Earthquake Measurements, some in collaboration with Milne. He invented several forms of apparatus for the measurements of earthquakes. In 1881 he returned to Scotland and entered the laboratory of Lord Kelvin again and took up research work in Electricity and Magnetism for Kelvin. He then represented the engineers, Lord Kelvin and Professor Jenkin, in the manufacture and laying of the Commercial Company's two Atlantic cables. He took part in all the expeditions of the Faraday made in connection with that undertaking. After the completion of this task he again returned to Kelvin's laboratory and became his assistant. During this time he aided in the design and manufacture of the well-known Kelvin Balances, and published a number of papers on Electrical Measurements. He wrote the article on the Electrical Telegraph and Telephones for the *Encyclopædia Britannica*.

Dr. T. C. Mendenhall became acquainted with Dr. Gray during their period of service in the University of Tokio, and in 1888, when Dr. Mendenhall was President of Rose, he became instrumental in bringing Dr. Gray to the Institute, as Professor of Dynamic Engineering. Dr. Gray organized the department and equipped the testing laboratory with appliances of his own designs, and continued to carry on experimental work along the lines of both mechanical and electrical study. He published a number of papers on Strength of Materials and Electrical and Magnetic Measurements. He designed an autographic recording apparatus for the study of the elastic behavior of materials. In 1891 he prepared the definitions for the Electrical and Magnetic Terms for the *Century Dictionary*.

In 1891 delivered the address at the Centennial Patent Celebration in Washington on Electrical Patents. In 1894 and 1895 prepared the Smithsonian Physical Tables published in 1896, revised in 1897, 1903, and 1904.

He had under preparation a text-book on Electrical Engineering, which unfortunately remains unfinished.

His services as an expert in Mechanical and Electrical Engineering and in patent litigation were widely sought. He was a most careful experimentalist, accurate and ingenious in inventing devices for research, and rarely have any of his results been questioned.

His writings are models of direct, clear exposition. As expert he invariably showed a commanding knowledge of the subject. As teacher he was attractive, and presented the subject in such a masterly manner that the student who was otherwise prepared could not help but follow in its development.

His personality was so attractive that he gained the affection of students at once. So strong was his manliness that their respect was compelled. A great, lovable man was he, whose work will live long after him, whose influence in the Institute will endure. He is and will be missed by alumni, students, friends, the city, for everywhere he filled his place and did well whatever should be done.

WORK AND ACTIVITIES OF THOMAS GRAY.

He was a member of the Royal Society of Edinburgh, the B. A. A. Sc., the A. A. A. S., A. I. N. A., A. S. P. E. E., A. S. M. E., Indiana Academy of Science, etc. He was a contributor to all of these, and held office in most of them. Some of the more important papers published by him are:

On the Determination of Magnetic Moments in Absolute Measure.

On the Specific Heats of Saline Solutions. Proc. R. S. E. Phil Mag.

On the Specific Resistance and Specific Inductive Capacity of Glass. *Phil. Mag.*

On the Effect of Permanent Elongation on the Specific Resistance of Metals. *Trans. R. S. E.*

On a Seismometer and Torsion Pendulum Seismograph. *Trans. S. S. Japan, Vol. I.*

On Steady Points for Earthquake Measurements. *Trans. S. S. Japan, Vol. III.*

On Instruments for Recording Earthquake Motions. *Phil. Mag.*

On the Best Arrangement for Wheatstone's Bridge for the Measurement of any Particular Resistance. *Phil. Mag.*

On a Seismograph for Large Motions. *Trans. S. S. Japan.*

On a Method of Compensating a Pendulum so as to make it Astatic. *Trans. S. S. Japan.*

Two papers on a New Seismograph. *Phil. Mag.*

On the Variation of the Specific Resistance of Glass with Density, Temperature, and Chemical Composition. *Proc. R. S., Vol. XXXIV.*

On the Graduation of Galvanometers for the Measurement of Currents and Electromotive Forces in Absolute Measure. *Electrician.*

On Gray and Milne's Seismographic Apparatus. *Quarterly Journal Geol. Soc.*

On the Size of Conductors for the Distribution of Electric Energy. *Phil. Mag.*

On the Measurement of the Horizontal Component of the Earth's Magnetic Field. *Phil. Mag.*

On a New Standard Sine-Galvanometer. *Phil. Mag.*

On the Electrolysis of Silver, and of Copper, and the Application of Electrolysis for the Standardizing of Electric Currents and Potential Meters. *Phil. Mag.*

On Silk and Wire Suspensions in Galvanometers, and on the Rigidity of Silk Fibres. *Phil. Mag.*

On an Improved Form of Seismograph. *Phil. Mag.*

On Electrical Measurements. Industries.

On a New Reflecting Galvanometer of Great Sensibility and on New Forms of Astatic Galvanometers. (Jointly with A. Gray.) Proc. R. S., No. 230.

On the Relation between the Electrical Qualities and the Chemical Composition of Glass and Allied Substances. (Jointly with A. Gray and J. J. Dobbie.) Proc. R. S., No. 231.

Earthquake Observations and Experiments in Japan. (Jointly with John Milne.) Phil. Mag.

On the Strength and Elasticity Constants of Certain Rock. (Jointly with John Milne.) Quarterly Journal Geol. Soc. of London.

Seismic Experiments. (Jointly with John Milne.) Phil. Trans. R. S., Part III.

On the Application of the Electrolysis of Copper for the Measurement of Electric Currents. Phil. Mag.

On Properties of Materials, six papers before the A. S. M. E., from 1888 to 1908.

On the Magnetic Properties of Iron. R. S. E.

Some of his designs and inventions from 1888 to 1908:

Transformer Testing Apparatus.

Automatic Recording Apparatus for Testing Machines.

Continuous Indicator.

Integrating Indicator.

Belt Dynamometer.

Tool Dynamometer.

Automobile Shock Absorber.

Rotary Pump.

Journal Friction Testing Machine.

Torsional Testing Machine.

Extensometer.

Electrometer for measuring dielectric capacity, and many similar devices.

ROSTER OF OFFICERS AND FACULTY.

PRESIDENTS.

- Charles Oliver Thompson, A.M., Ph.D., 1883-1885.
Thomas Corwin Mendenhall, A.M., Ph.D., LL.D., 1886-1889.
Henry Turner Eddy, A.M., Ph.D., LL.D., 1891-1894.
Carl Leo Mees, Ph.D., 1895—.

ACTING PRESIDENTS AND VICE-PRESIDENTS.

- Clarence Abiathar Waldo, A.M., Acting President, 1885-1886 and 1889-1890.
Carl Leo Mees, Ph.D., Acting President, Sept., 1890, to June, 1891, and 1894 and 1895.
Thomas Gray, B.S., Ph.D., Vice-President, 1891 to 1908.
Malverd Abijah Howe, C.E., Vice-President, 1909—.

REGISTRAR.

- Sarah P. Burton, 1883—.

FACULTY.

- William L. Ames, B.S., M.E., Professor of Drawing, 1883-91; Professor of Descriptive Geometry, 1891; Professor of Machine Drawing and Design, 1894-96.
Edward S. Cobb, B.S., Superintendent of Shops, 1883-88; Instructor Machine Design, 1887-88.
Charles A. Colton, E.M., Professor of Chemistry, 1883-85.
Clarence A. Waldo, A.M., Professor Mathematics, 1883-92.
James A. Wickersham, A.M., Professor of Languages, 1883—.
Charles C. Brown, C.E., Professor Mathematics and Instructor in Field Work, 1884-85.
Lucien I. Blake, Ph.D., Professor of Physics, 1884-86.

- William A. Noyes, Ph.D., Professor of Chemistry, 1885-1903.
- Asa B. Fitch, C. E., Professor of Civil Engineering during 1886.
- Malverd A. Howe, C.E., Professor of Civil Engineering, 1886—.
- Carl Leo Mees, Ph.D., Adjunct Professor of Physics, 1886-89; Professor of Physics, 1889—.
- Thomas Gray, Ph.D., Professor of Dynamic Engineering, 1887-1908.
- Charles S. Brown, B.Ph., Superintendent of Shops and Instructor Machine Design, 1888-1896; Professor of Machine Design, 1890-96.
- R. W. Mahon, Ph.D., Substitute Professor of Chemistry in absence of Professor Noyes in 1888.
- William H. Kirchner, B.S., Instructor in Mathematics, 1888-89; Junior Professor in Drawing, 1889-93.
- Arthur S. Hathaway, B.S., Professor of Mathematics, 1892—.
- Robert L. McCormick, C.E., Instructor in Mathematics, 1891; Instructor in Civil Engineering, 1894; Assistant Professor Mathematics, 1902; Assistant Professor Mathematics and Assistant Professor Civil Engineering, 1908.
- John B. Peddle, M.E., Instructor in Drawing, 1893; Professor of Machine Design, 1896—.
- Arthur Kendrick, A.M., Associate Professor of Physics, 1895-1901.
- Frank C. Wagner, A.M., Professor of Steam and Electrical Engineering, 1896—.
- Edwin S. Johannott, Jr., Ph.D., Associate Professor of Physics, 1899.
- Alvah W. Clement, B.S., Superintendent of Shops and Instructor in Shop Management, 1900-1907.
- John White, Ph.D., Professor of Chemistry, 1903—.
- Edwin Place, M.M.E., Instructor Laboratories and Lecturer on Electrical Construction, 1890-99.

Neil H. Williams, M.S., Instructor of Physics, 1904—;
Assistant Professor of Electricity, 1905-1908.

Clarence Knipmeyer, Assistant Professor of Electricity,
1909.

INSTRUCTORS AND ASSISTANTS.

Edward G. Waters, B.S., Fellowship Instructor in Physical
Laboratories, 1888.

R. R. C. Simon, Instructor in German, 1894-95.

Joseph D. Harper, B.S., Instructor in Civil Engineering,
1895-96.

Charles Wilbur, Instructor in Civil Engineering, 1895-96.

Arnold Tschudy, B.A., Instructor in German, 1895-96.

William E. Burk, B.S., Instructor in Chemistry, 1896-97.

Orange E. McMeans, B.S., Instructor in Drawing, 1896-99.

Albert A. Faurot, A.M., Instructor in German, 1896-1901.

John W. Shepherd, A.M., Instructor in Chemistry, 1897-98.

Arthur Winslow, B.S., Instructor in Civil Engineering,
1898-99.

George W. Mitchell, Instructor in Drawing, 1899-1900.

William H. Insley, B.S., Assistant in Architecture, 1900-01.

William M. Blanchard, Ph.D., Instructor in Chemistry,
1900-01.

Emery E. Harris, Instructor in Drawing, 1900-01.

Robert E. Earhart, Ph.D., Instructor in Physics, 1901-03.

Austin M. Patterson, Ph.D., Instructor in Chemistry,
1901-03

Harry A. Schwartz, B.S., Instructor in Drawing, 1901-02.

Edmund J. Hirschler, A.B., Instructor in German, 1901-03.

Arthur J. Paige, B.S., Instructor in Drawing, 1903-08.

John M. Nelson, B.S., Instructor in Chemistry, 1903-05.

Frank W. Bennett, A.B., Instructor in German, 1904-09.

Chester L. Post, B.S., Instructor in Civil Engineering,
1904-06.

Alfred W. Homberger, B.S., Instructor in Chemistry,
1905-07.

Roger De L. French, B.S., Assistant in Civil Engineering, 1906.

Luther Knight, M.S., Instructor in Chemistry, 1907-08.

William R. Plew, B.S., Instructor in Mathematics and Civil Engineering, 1907—.

Carl Wischmeyer, B.S., Instructor in Drawing and Descriptive Geometry, 1908.

Rufus A. Barnes, B.S., Instructor in Chemistry, 1908.

Frank W. Pote, B.S., Instructor in Laboratories, 1908.

SUPERINTENDENTS IN SHOPS.

Edward S. Cobb, 1882-1888.

Charles Sumner Brown, 1888-1896.

J. F. W. Harris, 1896-1899.

Alvah W. Clement, 1899-1907.

Elmer H. Willmarth, 1907—.

INSTRUCTORS IN MACHINE SHOPS.

William M. Towle, 1886-1887.

Garrett W. Logan, 1889—.

INSTRUCTORS IN WOOD SHOPS.

James H. Sherman, 1883-1890.

William P. Smith, 1891-1896.

Edward T. Wires, 1897—.

STATISTICAL HISTORY.

In March, 1883, the first preliminary circular of the Rose Polytechnic Institute announced a faculty of instructors of six professors and instructors, with three professorships unfilled. In September the number was increased to seven, in 1884 to eight, in 1888 to nine. From 1888 on, men in the shops, whose time was almost entirely given to instruction, were counted as instructors, so that in 1888 the number was fifteen, in 1889 and 1890 sixteen, 1891 and 1892 seventeen, 1893 and 1894 eighteen, 1895 twenty, from 1895 to 1905 twenty-one, from 1905 to 1909 twenty-two.

From 1883 to 1887 the Mechanical Engineering Course was the only one fully organized. There was no regular Professor of Civil Engineering, though instruction in Civil Engineering was given.

In 1887 the Civil Engineering Course was fully established, and in 1888 the first student was regularly graduated from that course.

In 1889 the course in Chemistry was fully established, and the first student graduated from that course.

In 1890 the demand for a special course in Electricity led to a modification of the Mechanical Engineering Course. A considerable amount of laboratory and class work in Electricity was substituted for shop work. In the modified course this was not recognized in the degree.

In 1893 the Electrical Engineering Course had been elaborated, and the degree of B. S. in Electrical Engineering was conferred.

In 1898 the course in Architecture was established, and in 1900 the first student in this course graduated.

Modifications in all courses were made from time to time to meet changing conditions, improve and advance the curriculum. In 1903 a limited number of electives in all

courses were introduced, and the system of grading and passing changed. Before this time a general average of 60 per cent. was required for passing. The different studies were weighted in proportion to the time given to each in the course. Any subject in which the grade average was below 40 per cent. meant failure. Under the elective system every student is required to attain an average of 60 per cent. in each subject to receive credits for it. For graduation 126 credits in required subjects and 19 credits in elective subjects are needed. These changes advanced the required scholarship considerably.

In 1891 conditions for earning the degree of M.S. in the respective courses were fixed, also the requirements for the securing of the engineering degrees in the several courses were defined. The first M.S. degree was granted in 1892 to Taro Tsuji, of Tokio, Japan, Class of '90, and the first C.E. degree in 1896 to Taro Tsuji. In 1897 the first degree of M.E. was conferred upon William R. McKeen, Jr., of Terre Haute, Class of '89, and the first E.E. degree in 1898 to Svend Johanneson, of St. Louis, Mo., Class of '93.

In 1883 the minimum requirements for admission were equivalent to about two years of high school work, such as is offered to-day. Examinations in Arithmetic, United States History, Geography, English Grammar, and Composition, and Algebra to Quadratic Equations, were held for entrance. In 1886 the requirements were advanced to an equivalent of at least three years of high school work. Plane Geometry and Algebra through Quadratics were examination subjects. In 1897 the entrance requirements were further advanced. All of Geometry, plane and solid, was required. No conditions for admission were allowed under these standards. In 1905 the requirements were made fully equivalent to a four years' high school course. Fifteen units are necessary for entrance, and admission can be gained either by diploma from recognized schools or by examination.

From 1883 to 1908, 1,460 different students have attended the Institute; 526 have graduated. The students have come from forty-one different States and Territories and eleven foreign countries. The Alumni in 1908 were professionally engaged in forty-two different States and Territories and fourteen foreign countries.

Ninety-three per cent. of the living graduates are engaged in pursuits for which an engineering education may be said to be essential. Seventeen per cent. of the graduates were located in Indiana.

In 1888 Mrs. S. A. Heminway contributed a fund for the establishment of a gold medal, of the value of fifty dollars, to be awarded annually to that member of the Senior Class whose standing was highest during the whole course.

A year later a bronze copy was added, to be awarded for the highest standing in the Freshman year.

The awards have been:

Gold Medal—

- 1888. E. G. Waters.
- 1889. A. J. Hammond.
- 1890. George R. Putnam.
- 1891. R. L. McCormick.
- 1892. A. M. Dietrich.
- 1893. E. S. Johonnott.
- 1894. C. E. Mendenhall.
- 1895. L. E. Troxler.
- 1896. W. R. Sanborn.
- 1897. H. S. Heichert.
- 1898. H. B. Stilz.
- 1899. J. J. McLellan.
- 1900. J. I. Brewer.
- 1901. R. N. Miller.
- 1902. A. J. Paige.
- 1903. { B. C. Jacob.
- R. B. Arnold.
- 1904. H. A. Mullett.
- 1905. J. C. Sproull.
- 1906. C. Wischmeyer.
- 1907. E. J. Miner.
- 1908. C. B. Andrews.

Bronze Medal—

- A. M. Dietrich.
- A. M. Hood.
- C. E. Mendenhall.
- W. O. Mundy.
- O. E. McMeans.
- H. S. Heichert.
- A. C. Eastwood.
- J. J. McLellan.
- J. I. Brewer.
- R. N. Miller.
- C. E. Cox.
- B. C. Jacob.
- H. A. Mullett.
- H. L. Watson.
- C. Wischmeyer.
- E. J. Miner.
- C. B. Andrews.
- J. A. Shepard.
- H. J. Madison.
- E. A. Mees.

INSTITUTE ORGANIZATIONS.

THE TECHNIC.

In 1890 the question of the publication of a college paper was agitated, and found such approval from the President, Dr. Eddy, the Faculty, and the students, that in 1891 *The Technic* was established and the first number issued. Much of the credit for the establishment of this paper is due to Mr. Arnold Layman, of '92, whose energy, untiring efforts, and marked ability laid the foundation for success. During the first year the struggle was severe, as the expenses of *The Technic* had to be met from subscriptions. So excellent was the publication and so popular, that very rapidly the financial problem no longer presented serious difficulties. The paper was enlarged and new departments were added.

During the first year a number of changes occurred in the editorial board and management, as the work was largely experimental. Later on, through experience, the maintenance of the high standing of the publication was made easier. After the first four years of its existence, owing to constantly increasing cost of its production, the financial problem again became serious, and the size of the paper had to be reduced. This reduction continued until 1899, when *The Technic* received support from the Students' Council by appropriation of a portion of the students' funds to defray the expenses of publication, and all students who contributed to the fund became entitled to a copy of *The Technic*, thus eliminating the subscription element for regular students in the Institute. The excellence of *The Technic* throughout the years of its existence has been commented upon by all who, through exchanges or otherwise, have read it. It is acknowledged to be one of the best college papers of its kind.

ROSTER OF TECHNIC STAFF.

	Errors.	Assistant.	Artist.	EXECUTIVE. <i>Business Manager.</i>
<i>Volume.</i>	<i>Chief.</i>			
I.....	W. A. Layman.			E. F. McCabe. A. M. Hood. L. S. Rose. E. L. Shaneberger. E. L. Shaneberger. E. L. Shaneberger. W. R. Sanborn. J. T. Montgomery.
II.....	W. M. Blinks.			
III.....	W. M. Blinks.			
IV.....	H. H. Meadows.			
V.....	O. E. McMeans.			
VI.....	J. H. Hall. A. C. Eastwood.	J. J. McLellan.	J. M. Lansden.	
VII.....	T. D. Witherspoon.	A. D. Kidder.	J. M. Lansden.	H. C. Schwable.
VIII.....	T. D. Witherspoon.	A. D. Kidder.	A. P. Stone.	H. C. Schwable.
IX.....	R. K. Rochester.	R. N. Miller.	D. Meriwether.	E. L. Flory.
X.....	R. N. Miller.	W. A. Peddle.	A. N. Austin.	E. L. Flory.
XI.....	W. A. Peddle.	R. C. Warren.	A. N. Austin.	C. L. Post.
XII.....	H. B. Pettit.	F. D. Lewis.	A. N. Austin.	R. F. Garrettson.
XIII.....	L. A. Touzalin.	George Benson.	I. F. Dorn.	R. C. Blanchard.
XIV.....	George Benson.	C. Wischmeyer.	C. B. Cook.	H. W. Eastwood.
XV.....	C. Wischmeyer.	H. W. Wischmeyer.	R. S. Sage.	C. W. Post.
XVI.....	C. B. Andrews.	H. D. Baylor.	R. S. Sage.	Wm. C. Knopf.
XVII.....	C. B. Andrews.	E. M. Brennan.	R. M. Stubbs.	I. R. Ralston.
XVIII.....	E. M. Brennan.	N. A. Bowers.	Wm. R. Rockwood.	P. F. Stokes.

THE MODULUS.

The Class of 1892, near the close of its college career, conceived the idea of preparing a class publication which should picture college life in the characteristic way in which it is viewed from the student's standpoint.

The name of *Modulus* was chosen. The first *Modulus* appeared in 1892, full of matter interesting to students and the friends and the Faculty of the Institute, and containing many things of historical interest and value.

The Class of 1896, as Juniors, issued the second *Modulus*. Thereafter a *Modulus* has been published every two years by the Junior Class. The whole series forms a collection which gives a pleasant picture of college life.

ATHLETICS AND ATHLETIC ASSOCIATION.

Before 1888 there was little in the way of organized athletic work. In that year, largely through encouragement given by Dr. T. C. Mendenhall, then President, the athletic organizations had their beginning. A baseball nine was organized in that year, as well as an Athletic Association, so that at the Commencement of 1888 a part of the program consisted of a Field Day with athletic exercises. The organization was temporary, but in the following year was made formal and permanent by the adoption, in general assembly, of a constitution. Officers were elected and systematic work begun. From that time on the Association continued as an independent organization, supported by the voluntary subscriptions of those students who became members of the Association.

In 1889, 1890 and 1891 Field Days were held at Commencement time. In addition, in 1891 there was an Intercollegiate Field Day, and the Association became affiliated with the Indiana colleges, forming the Intercollegiate League. In subsequent years the Intercollegiate Field Days took the

place of the Institute Field Days, which before that formed a part of Commencement Week exercises.

The President of the Institute was *ex-officio* chairman of the Board of Directors. During all these years throughout the State athletics were pursued simply and solely for the pleasure and profit that the students might derive from taking part in them, and did not become organized so as to make competitive superiority in athletics a kind of an advertising feature for institutions, until subsequent years.

During the first years, when athletics was sport only, Rose carried off all the honors and trophies. As athletics throughout the State became a larger factor, the character of the work changed, and it was found necessary to make provisions to meet this condition, which was done in the erection of the gymnasium in 1894.

By voluntary subscription from students and Alumni about \$1,200 was raised, the remainder of the required sum being appropriated by the Institute. Until 1899 all expenses incident to athletic work were met by membership fees, voluntary contributions, and proceeds of Field Days. The funds of the baseball, football and tennis clubs were kept separate. In 1899, with the organization of the Students' Council, the financial needs of the Athletic Association were met by assigning a proportion of the Students' Fund for the defraying of necessary expenses. From 1899 on, all of the different teams were governed through the Athletic Association.

ORCHESTRA.

In November, 1889, the Class of 1893 organized the Orchestral Club. In June of the following year the club was enlarged and made an Institute organization.

Mr. S. E. Johannesen, Class of 1893, an accomplished musician, was made leader and President of the club. Until his graduation the Polytechnic Orchestra flourished, and gave a number of concerts of merit. After Mr. Johan-

nesen's graduation it was directed for a short period by Charles E. Mendenhall, of 1894, Dow Sandham, C. L. Mees and Mr. Colberg.

Following 1896 the orchestra was rather passive for several years, until in 1902 Mr. A. J. Paige, then Instructor, and Ira Marshall, student, reorganized it, and regular rehearsals were again held.

In November, 1902, the club was so fortunate as to obtain the services of Mr. Hugh McGibeny, of Indianapolis, as director, who, on account of his interest in the work, has continued to act in that capacity at considerable personal inconvenience.

Through his enthusiastic, unselfish, and excellent endeavor the orchestra has become most proficient, and has rendered programs of great musical merit.

GLEE CLUB.

The Glee Club grew out of the meetings of a band of young men, who met from time to time with Professor Wickersham at his home to sing German college songs and Volkslieder. These meetings were so stimulating that a taste for chorus and quartette singing was developed.

About 1896 a number of high-school boys, who expected to enter the Institute, formed a "Black Sheep" club, and when they entered the Institute organized themselves into a Glee Club, under the directorship of Mr. A. J. Paige.

Later a permanent organization was formed, and Mrs. A. G. Adams became leader. The club has been prosperous, and has added much to the pleasures of Institute life.

Mrs. Adams has been untiring in her efforts, and has trained the club from year to year to a high degree of proficiency. She has composed a number of songs especially for it, which have been effectively rendered.

For some years a number of excellent concerts and performances have been given in conjunction with the orchestra.

THE MANDOLIN CLUB.

A Mandolin Club was organized in 1893, and has, under the able leadership of Mr. Brandenburg, prospered, and in concerts and entertainments added much to the pleasure of all friends of the Institute.

Y. M. C. A.

In 1892 the first formal organization was effected. Meetings were held in the lecture rooms of the Central Presbyterian Church. Since that time the association has been growing in influence and strength, and much good has been accomplished.

The organization appeals to all students alike, and there is a common ground upon which to meet. It has done much in furnishing good social relaxation. Its work in taking care of new students, and aiding them in securing rooms and accommodations, and making them acquainted with one another, has been most effective, of aid to the authorities, and grateful to all new comers.

CAMERA CLUB.

The Camera Club seems to have grown out of individual taste of students for photography, stimulated by Professor William L. Ames, who, before an organization was effected, gave instructions in photography to all who were interested. Just when a formal organization resulted is not definitely known. A dark room for the use of students was arranged in the Institute in the eighties.

The club has continued active, and the excellent photographs that are exhibited in prize contests and the large number of students who engage in the competition, show the interest that has been aroused and the educational value it has exerted.

SCIENTIFIC SOCIETY.

In 1894 the Scientific Society was organized. The object was to give practice to students in reading and public speaking; to encourage collateral reading and the study of scientific topics, other than those that were treated of in the regular course. Students and professors prepared and read at monthly meetings papers and lectures, often experimentally illustrated, and these were discussed.

The society has continued to meet, though not at regular intervals, and many excellent papers have been presented, and in a measure it has accomplished its purpose.

THE TELEGRAPH ASSOCIATION.

As early as 1885 several students in the Institute desired to acquire some practical knowledge of telegraphy, and erected a few lines strung across housetops and upon trees. Mr. Edward Waters, of 1888, an expert operator, was the moving spirit. Through the aid of Mr. Sweeney, of the Vandalia Line, connection was made with the Train Dispatcher's office, and a time service furnished the Institute.

The interest in telegraphy became so general that in 1889 an association was formed, known as the R. P. I. Telegraph Association. Lines were extended and a considerable number of instruments installed.

The association continued active until within the past year, when increasing difficulty in securing permission to run lines led to its dissolution. While it existed, much profitable practice was gained and a number of quite expert operators were developed.

THE STUDENTS' COUNCIL.

Established 1899. The object of the organization is to coördinate the work of the different societies and clubs, and

to cooperate with the Faculty in all matters pertaining to the welfare of the institution and its students.

The work of the Council has been effective and the results attained gratifying, and many problems in college life have been handled and solved in a satisfactory manner through the cooperation of the Council and Faculty.

THE ALUMNI ASSOCIATION.

As a permanent organization, the Alumni Association of the Rose Polytechnic Institute first sprang into existence on June 23d, 1887, when, in response to an invitation by President Mendenhall, a dinner was given by the Board of Managers to the members of the graduating class, the Faculty, and the Alumni. After the dinner a meeting was called, which has since been termed the first annual meeting of the Rose Polytechnic Alumni Association. At this meeting it was resolved to make the Alumni of the R. P. I. a permanent organization, and in order to do this a President, Vice-President, and Secretary-Treasurer were chosen, and two committees appointed by the President. One of these committees was directed to draw up a constitution and by-laws and submit the same at the next meeting of the Association. The second committee was called the Executive Committee, and to it was delegated power to make all arrangements necessary for annual meetings, banquets, etc.

At the second annual meeting of the Alumni, June 21, 1888, which was held after a dinner given by the Association to the Board of Managers, Faculty, and themselves, in the private parlor of the Terre Haute House, the constitution prepared by the committee appointed a year before was adopted, subject to a revising board, and officers were elected for the next year.

At the third annual meeting, June 21, 1889, the constitution was approved, adopted, and ordered printed, and a copy sent to each Alumnus.

At the meeting in June, 1890, the colors then in use by the undergraduates, to-wit: "Rose and White," were recognized and adopted as the official colors of the student and graduate body. The class pin of the Class of 1890 was adopted as the Alumni pin, but this action of the fourth annual meeting has never been accepted by the members.

In June, 1891, the question of an official pin was referred to a special committee, and at the meeting in 1892 that now commonly in use by the undergraduates was adopted.

In 1894 the Association was requested to select an "Alumni Orator" to address the graduating class of 1895, and since that time the Association has been represented at each Commencement.

As the Association grew there came to be a feeling that more could be done to advance the Institute if the Association coöperated more practically with the Board of Managers. Consequently, early in 1896 the Board invited the Association to appoint an advisory committee of three to visit the Institute and advise the Board.

The invitation of the Board came up for consideration at the tenth annual meeting in June, 1896, and resulted in a careful canvass of the entire situation. Carefully-considered recommendations were made by the St. Louis and Indianapolis sections, and the entire matter of coöperation with the Board was referred to a committee, with instructions to report at the next annual meeting.

The Committee on Alumni Representation made a full report at the 1897 meeting, advocating the appointment of Alumni representatives to serve for limited terms on the Board of Managers, and this report was adopted.

Prior to the 1898 meeting the Board of Managers provided for Alumni representatives in accordance with the request of the Association, and in June, 1899, Messrs. Ben McKeen, '85, and V. K. Hendricks, '89, were elected as the first of such representatives. The Association is also rep-

resented on the Board by two life members, Messrs. J. B. Aikman, '86, and J. S. Royse, '94.

The Association also has in process of building an "Endowment Fund" of several thousand dollars, which has been added to the General Endowment Fund of the Institute.

There is also a growing "Loan Fund," which can be drawn upon by worthy needy students recommended by the Faculty. This fund is now being drawn upon.

The attitude of a large majority of the Alumni is one of firm loyalty to the Institute.

TECH CLUBS.

In 1895 several Rose Tech Clubs were formed, the first one in Chicago, others in St. Louis, Indianapolis, Pittsburg, Louisville, New York, and Terre Haute. The primary object was to bring together Rose men in a social way. At the meetings it became apparent that these clubs could be of help to the Institute and Alumni. From time to time the President and members of the Faculty were invited to the gatherings, and the activities and needs of the Institute discussed. Many valuable suggestions have come from the Alumni at these informal gatherings, and much good has come to the Institute through their activity. The organization of these clubs, with the exception of the New York Club and the Terre Haute Club, has not been of a permanent character; no roster of officers can be given.

The New York Club has been one of the most active; it has welcomed and made pleasant the stay of all Rose men who visit the metropolis, and has aided many young Alumni in securing positions. The St. Louis, Chicago, Pittsburg, and Louisville Clubs have entertained the Seniors on their trips, and made these trips profitable and long to be remembered.

PAST OFFICERS OF ALUMNI ASSOCIATION.

<i>Year.</i>	<i>Presidents.</i>	<i>Vice Presidents.</i>
1888.	Benjamin McKeen, '85.	Edward C. Elder, '86.
1889.	Samuel S. Early, '85.	John A. Parkhurst, '86.
1890.	H. St. Clair Putnam, '86.	William R. McKeen, Jr., '89.
1891.	John B. Aikman, '87.	George R. Putnam, '90.
1892.	Frank T. Hord, '88.	Omar C. Mewhinney, '91.
1893.	William J. Davis, Jr., '92.	Edward C. Elder, '86.
1894.	Clinton B. Kidder, '88.	Herbert W. Foltz, '86.
1895.	William R. McKeen, Jr., '89.	Austin H. Mory, '94.
1896.	Victor K. Hendricks, '89.	John B. Peddle, '88.
1897.	George H. Chapman, '88.	Howard M. Stanton, '94.
1898.	Samuel D. Collett, '90.	W. Offutt Mundy, '95.
1899.	John B. Peddle, '88.	J. David Ingle, '97.
1900.	Robert L. McCormick, '91.	Fred F. Hildreth, '94.
1901.	Herbert W. Foltz, '86.	Edwin S. Johannott, '93.
1902.	Herbert W. Foltz, '86.	Robert L. McCormick, '91.
1903.	Robert L. McCormick, '91.	Edwin S. Johannott, '93.
1904.	Robert L. McCormick, '91.	John B. Peddle, '88.
1905.	John B. Peddle, '88.	Edwin S. Johannott, '93.
1906.	John B. Peddle, '88.	Edwin S. Johannott, '93.
1907.	William E. Burk, '96.	George M. Davis, '88.
1908.	Edson F. Folsom, '92.	Harry G. Brownell, '86.
1909.	John B. Aikman, '87.	Harry G. Brownell, '86.

Secretary-Treasurer.

<i>Year.</i>		<i>Year.</i>	
1888.	Herman F. Goetz, '87.	1893	} John B. Aikman, '87.
1889.	Clinton B. Kidder, '88.	to	
1890	} Herman F. Goetz, '87.	1905	
1891		1906	} Arthur M. Hood, '93.
1892.	George M. Davis, '88.	to	
		1909	

Commencement Speaker.

Year.

- 1895. .Francis T. Hord, '88.
- 1896. .John B. Aikman, '87.
- 1897. .Herbert Foltz, '86.
- 1898. .W. Arnold Layman, '92.
- 1899. .Edwin S. Johonnott, '93.
- 1900. .William H. Boehm, '91.
- 1901. .Walter B. Wiley, '89.

Year.

- 1902. .Samuel S. Wales, '91.
- 1903. .Chas. E. Mendenhall, '94.
- 1904. .Edson F. Folsom, '92.
- 1905. .Ozni P. Hood, '85.
- 1906. .William E. Burk, '96.
- 1907. .W. M. Anderson, '94.
- 1908. .John G. D. Mack, '89.

1909. .H. St. Clair Putnam, '86.

Alumni Members of Board of Managers.

Year.

- 1899-01. .Benjamin McKeen, '85.
- 1899-02. .Victor K. Hendricks, '89.
- 1901-03 } W. Arnold Layman, '92.
- 1903-05 }
- 1902-04. .Fred F. Hildreth, '94.

Year.

- 1904-06 } Herbert Foltz, '86.
- 1906-08 }
- 1905-07. .Theo. L. Condron, '90.
- 1907-09. .Arthur M. Hood, '93.
- 1908-10. .William E. Burk, '96.

ABBREVIATIONS USED.

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- A. A. A. S.—American Association for the Advancement of Science.
F. A. A. A. S.—Fellow American Association for the Advancement
of Science.
A. S. P. E. E.—American Society for the Promotion of Engineering
Education.
A. S. C. E.—American Society of Civil Engineering.
A. S. M. E.—American Society of Mechanical Engineers.
A. I. E. E.—American Institute of Electrical Engineers.
A. R. E. M. W. A.—American Railway Engineering and Maintenance
of Way Association.
A. I. N. A.—American Institute of Naval Architects.
A. P. S.—American Physical Society.
A. G. S.—American Geographical Society.
A. C. S.—American Chemical Society.
B. A. A. S.—British Association for the Advancement of Science.
R. S. E.—Royal Society of Edinburgh.

ALUMNI BIOGRAPHICAL DICTIONARY.

I. EARLY, SAMUEL STOCKWELL. 1885.

Admitted to Institute in September, 1883, at the age of 19, from the Worcester Free Institute of Massachusetts; graduated in the Mechanical Engineering Course in June, 1885; residence at the time of entrance was Terre Haute. After graduation entered the employ of S. S. Hepworth & Co., of Yonkers, N. Y., manufacturers of sugar machinery, centrifugals, and engine lathes. This firm suspended operations in April, 1886—as Mr. Early states in his autobiography, not because of the munificent salary which they paid him. From April, 1886, to September, 1886, served with Benjamin Silliman, architect, of Yonkers, N. Y., in architectural work. From September, 1886, to December, 1887, served with SooySmith & Co., of New York City, contractors and builders of subaqueous foundations for railroad bridges, lighthouses, etc., severing his connection with that firm because of failure in health. In March, 1888, he became private secretary to President W. R. McKeen, of the Vandalia Railroad, who was an intimate friend, remaining with him until June 30, 1893; this brought him back to his home at Terre Haute. In July of 1893 was made General Manager and Treasurer of the Terre Haute Shovel and Tool Company, manufacturers of shovels, spades, scoops, etc., in which capacity he served until 1903, when these works became absorbed by the Ames Shovel and Tool Company. He was transferred on July 1, 1903, to North Easton, Mass., as Manager of the Oliver Ames & Sons Corporation Plant, of the Ames Shovel and Tool Company, which position he holds at the present date. On January 21, 1891, he was married at Terre Haute. Served on the Board of Managers of the Rose Polytechnic Institute from 1901 until his position was vacated because of removal from Terre Haute to North Easton, Mass., and President of the Alumni Association 1891 and 1908.

2. HOOD, OZNI PORTER. 1885.

Born June 14, 1865, in Lowell, Mass. Entered the Rose Polytechnic Institute on September 18, 1883. He was admitted from the Junior class of the Worcester Free Institute of Massa-

chusetts. His residence at the time of entrance to the R. P. I. was Indianapolis, Ind. Graduated in the Mechanical Engineering Course. Immediately after his graduation in 1885 served with H. P. Hood at Indianapolis as patternmaker, and became Superintendent of the Royal Manufacturing Company in 1886. From September, 1886, to 1887, acted as Superintendent of the shops of the Kansas State Agricultural College. In 1887 was made Professor of Mechanics and Engineering, which professorship he held until June, 1898, when he was elected Professor of Mechanical and Electrical Engineering in the Michigan School of Mines, which position he has filled with signal success. He has combined with his professorial and teaching work the work of Consulting Mechanical Engineer, and acts in this capacity for more than twenty of the copper and iron mines in Michigan. His work has been along both the lines of teaching and practical engineering. The degree of M.S. was conferred upon him in 1895 and that of M.E. in 1898, both from Rose. He is a member of the A. S. M. E., A. I. M. E., S. P. E. E., and A. A. A. S. He has been a contributor to technical literature. In the *American Machinist* and *Transactions of the American Society of Mechanical Engineers* account of his work may be found. He was married at Terre Haute on July 31, 1884. Commencement speaker, 1905.

3. MCKEEN, BENJAMIN. 1885.

Born at Terre Haute January 29, 1864. Admitted to the Rose Polytechnic Institute September, 1883, from the Worcester Free Institute, where he had attended the years of 1881-'83; graduated in Mechanical Engineering Course in 1885. In September, 1885, entered the railroad service as draftsman in the office of Superintendent of Motive Power and Machinery of the T. H. & I. Railroad. Later served as rodman in the engineering corps, and in April, 1886, was appointed resident engineer on the work of cutting down the Rockville grade on the Logansport Division of that railroad. On January 1, 1887, was appointed Engineer of Maintenance of Way, Logansport Division, and in 1889 was Chief Engineer of Construction in completing the Indiana & Lake Michigan Railroad in addition to being Engineer of Maintenance of Way of the Logansport Division. On completion of the I. & L. M. R. R., 1890, was made Engineer of Maintenance of Way of that division. August 1, 1892, was transferred to the Peoria Division as Engineer of Maintenance of Way, and on January 5, 1894, was advanced to the position of Superin-

tendent of that division. June 10, 1901, was appointed Superintendent of the Main Line Division of the Vandalia Railroad. April 1, 1902, was appointed Superintendent of the Chicago Terminal Divisions of the Pennsylvania Lines west of Pittsburg. This transferred his residence to Chicago. On December 15, 1903, was further advanced to the position of General Manager of the Vandalia Line, with office at St. Louis, Mo., which position he holds to-day. In 1895 he became a member of the A. S. C. E. On October 20, 1901, he was married in Terre Haute. Mr. McKeen has been continuously in railroad service since graduation. He was the first President of the Alumni Association in 1888, and served as Alumni member on the Board of Managers in 1899 and 1901.

4. BROKAW, CHARLES CRUFT. 1886.

Entered the Institute from Terre Haute March, 1883, age 19. Graduated from Mechanical Engineering Course in 1886. Was draftsman for Chicago, Burlington & Quincy Railroad Company for two years; then was with the Benner Iron Company, of Chicago, for more than a year; then in Bridge Department of Chicago, Milwaukee & St. Paul Railway. In 1892 was Assistant Engineer of Brown Hoisting and Conveying Company, and in 1893 Chief Draftsman of the Pittsburg & Lake Erie Railway, which position he held until his death in 1894.

5. BROWNELL, HARRY GALT. 1886.

Born at Elmhurst, Ill., August 9, 1866. Entered the Institute in September, 1883; graduated from Mechanical Engineering Course in 1886. After graduation entered the employ of the Chicago Edison Company, with which company he remained until 1887. Then became Assistant City Foreman of the Belding Motor and Manufacturing Company, remaining with them until 1890. Then was Foundry Superintendent with George E. Lloyd & Co., of Chicago. Also acted as designer of machinery, and became identified with the National Schools of Electricity, in charge of lecture and class-room work until 1895. Was then elected to the position of Principal of the Manual Training High School at Louisville, where he served until 1903, when he resigned, and identified himself with the University School of Louisville, remaining until 1908. During this whole time acted in various establishments as consulting engineer. Since he severed his connection with the University School has acted

entirely as consulting engineer. Was married in Terre Haute, May, 1888. Mr. Brownell's work has been both along the engineering and educational lines. He planned equipment for several large power plants in Louisville, and while associated with the Belding people designed one of the first compound-wound electro-plating dynamos.

6. CHAPPLE, JOHN TUCKER. 1886.

Entered the Institute on March 6, 1883, at the age of 16, from Terre Haute; graduated in the Mechanical Engineering Course in 1886. From 1887 to 1891 occupied a position with Nordyke & Marmon Mills and Mill Equipment Company at Indianapolis. From 1891 to 1894 he was engaged with the Indianapolis Bicycle Company at Indianapolis. From 1895 to 1900 he was with the firm of J. T. Chapple & Sons, plane sifter mills, at Mitchell. From 1901 has been engaged in mercantile business in Mitchell. No record has been obtainable from him in recent years.

7. ELDER, EDWARD CLINTON. 1886.

Entered the Institute on March 6, 1883, age 19, from Indianapolis. Graduated in 1886, and was employed with the Indianapolis Rolling Mill Company at Indianapolis from 1887 to 1888; in 1889 with the Archer Gas and Fuel Company of Cleveland, Ohio; in 1890 with the P. H. & F. M. Roots Company at Connersville. From 1891 to 1898 was Secretary of the Clay Shingle Company at Indianapolis. Then studied medicine, graduating from the Indianapolis Medical College with the degree of M.D. April, 1901. In 1902 became Senior Assistant Physician of the Northern Indiana Hospital for the Insane at Logansport, remaining there until 1905. To date has been a practicing physician, his home address being Indianapolis.

8. FOLTZ, HERBERT. 1886.

Born at Indianapolis, February 23, 1867; entered the Institute March, 1883; graduated in the Course of Mechanical Engineering in 1886. In 1887 entered the service of the Illinois Steel Company at Joliet, Ill., remaining four years, after which entered the Art Institute at Chicago, and in 1891 began practice of architecture at Indianapolis, in which work he has continued to date. In 1904 associated himself with Wilson B. Parker, firm style, Foltz & Parker, Associated Architects. In 1898 was

elected to Fellowship in the American Institute of Architects. Some of the larger commissions which have come to him are the plans for the Southeastern Indiana Hospital for the Insane, at Madison, the aggregate appropriations already made for this amounting to \$1,500,000; the Indianapolis Y. M. C. A.; Terre Haute Y. W. C. A.; La Porte County Jail; College of Medicine, Indiana University; Science Building of Earlham College, a considerable number of public school buildings, and many of the most attractive residences in Indianapolis. He was married at Joliet, Ill., on August 3, 1893. Mr. Foltz's unselfish services in connection with the Institute as member of the Board of Managers and as official in the Alumni Association are noted elsewhere.

9. HEDGES, ARTHUR WILLIS. 1886.

Entered the Institute March, 1883, from Clinton, Ind., age 18; graduated in the course of Mechanical Engineering in 1886. After graduation entered into business pursuits in Clinton, and in 1892 became associated with the Citizens' Bank at Clinton. Was made cashier of that bank in 1894, which position he holds to date.

10. MASTERSON, WESLEY CLINE. 1886.

Born at Carrollton, Ky., July 1, 1866. Entered the Institute in March, 1883; graduated in 1886. From 1886 to 1895 occupied a position in the drafting room of the Indianapolis Car and Manufacturing Company. From 1895 to 1900 was engaged in the Railway Mail Service; from 1900 to 1902 in the drafting room of the Outing Bicycle Company; from 1902 to 1903 with the Hearsey Vehicle Company. Since 1893 he has been in service as Secretary with the E. P. King Company. Residence, Indianapolis, Ind.

11. PARKHURST, JOHN ADELBERT. 1886.

Born in Dixon, Ill., September 24, 1861. Entered the Institute in September, 1883; graduated in the Mechanical Engineering Course in 1886. From September, 1886, to June, 1888, Instructor in Mathematics in the Institute. From 1888 to 1898 he gave his time to the study of astronomy in his private observatory at Marengo, Ill. In 1898 was made Instructor of Astronomy at the Yerkes Observatory, Williams Bay, Wis., where he remains

to date. Was granted the degree of M.S. by Rose in 1897, and the degree of A.B. by Wheaton College in 1906. Is a member of the Astronomical and Astrophysical Society of America, of the Astronomische Gesellschaft, and of the Royal Astronomical Society. Was married at Terre Haute in 1888. His original work has been mainly the determination of the Period and Light Curves of Variable Stars, the Spectra Stars, Determination of Faint Stellar Magnitudes, which work was done in 1906 under the auspices of the Carnegie Institution, and original work on the Absolute System of Photographic Magnitudes of Stars. His work on variable stars is classic, and his study has opened a new field in Stellar Photometry and Photographic Photometry.

12. PUTNAM, HENRY ST. CLAIR. 1886.

Born at Davenport, Iowa, July 8, 1861. Entered Rose Polytechnic Institute on September 18, 1884. Before entering the Institute studied law with his father, and graduated from the Law Department of Iowa State University with honors in 1882, with the degree of LL.D. His early desire to become an engineer culminated in his entering the Junior class of the Institute. He graduated in 1886 from the Mechanical Engineering Course. In 1887 entered the service of the Thomson-Houston Electric Light Works at Lynn, Mass., remaining with them until 1888, at which time the Thomson-Houston Carbon Company was organized, of which he was made Director, Treasurer, and Engineer, works at Fremont, Ohio. From 1892 to 1894 acted in various capacities as Electrical Engineer, and in 1894 was made General Manager of the American Carbon Works at Noblesville. In 1895 began the work of Consulting Engineer, with offices in Chicago, remaining until 1900, when he removed to Philadelphia, and was associated with Horatio A. Foster, and in 1904 removed to New York, associated in partnership with L. B. Stillwell. He was granted the degree of M.S. by Rose in 1905 and the degree of E.E. in 1907. He has membership in the A. I. E. E., A. A. A. S., A. G. S., Davenport Academy of Science, Railroad Club of New York, Engineers' Club of New York, and various social clubs. His work as electrical engineer has been varied, the most important of it having to do with the electric transportation problem. He has contributed to scientific literature some twenty-eight articles and papers upon electrical engineering subjects. President of the Alumni Association, 1890.

13. SAMES, CHARLES McCAUGHEY. 1886.

Entered Rose Polytechnic Institute in March, 1883, age 17, from Rockford, Ill.; graduated in Mechanical Engineering Course in 1886. Entered service of the Thomson-Houston Electric Company at Lynn, Mass., immediately after graduation, remaining until 1887. In 1887 was made Superintendent and Business Manager of the Wagon and Implement Works of Peter Sames, his father, at Rockford, Ill. Served almost continuously in this capacity with some interruptions until 1900. In 1890 for a short time was Electrical Engineer for the Shaw Electric Crane Company at Milwaukee, Wis., and also engaged in the manufacture of electric motors at Rockford, Ill. In 1901 he removed to Jersey City, N. J., and spent several years in travel, and in preparing a manuscript for a pocket book of Mechanical Engineering, first issued in 1905, reaching a third edition in 1908. From 1903 to 1906 he acted as Consulting Mechanical Engineer, and in 1906 became editor of Book Publications for the Engineering News Publishing Company at New York City. In 1907 became editor of the *Engineering Digest*, first founded under the name of *Technical Literature*, and has been acting in this capacity to date. He was married on December 20, 1899. Mr. Sames's pocket book has received merited recognition, as is indicated from the rapid call for new editions.

14. SANDERSON, DAVID POWERS. 1886.

Born at Cedar Grove, Ind., October 4, 1863; entered the Institute March 6, 1883; graduated in Civil Engineering Course in 1886. In 1887 became Assistant Engineer with P. M. Blake, Hydraulic Engineer, at Hyde Park, Mass. From 1888 to 1889 acted as Assistant Engineer for the N. P. Railway through Montana, Idaho, and Washington, with headquarters at Tacoma. In 1890 became Engineer for Anacortes and Fidalgo City, Wash., and Chief Engineer for the F. C. & A. Electric Railway. In 1891 removed to South Bend and served with James & Rixon. Then returned to railway work, entering the Operating Department, serving with the Great Northern Railway at Seattle in 1893, and with the Columbia & Puget Sound Railroad at Seattle from 1894 to 1896. Since then served the Traffic Department as General Agent of the Great Northern Railway at Vancouver, B. C. Was married March 25, 1900.

15. SCOTT, CHARLES EDGAR. 1886.

Entered the Institute March 6, 1883, at the age of 22, from Terre Haute; graduated in Mechanical Engineering Department in 1886. From 1887 to 1889 served as draftsman with E. S. Babcock, Architect, at San Diego, Cal. In 1889 entered the service of the California Tool Company at San Francisco. In 1890 entered the office of Reid Bros., Architects, in San Francisco. In 1892 removed to Danville, Ill., and became a member of the firm of Mater & Scott, Architects. In 1893 removed to Terre Haute, and has been professionally engaged as architect to date. He made plans for and superintended the construction of many of the large business blocks and warehouses.

16. SEATH, JAMES ROSS. 1886.

Entered the Institute March 6, 1883, at the age of 20, from Terre Haute; graduated from the Mechanical Engineering Department in 1886. In 1887 entered the service of the Terre Haute Car and Manufacturing Company, of which his father was Superintendent. In 1888 became a member of the firm of King-Seath Stove Foundry, Terre Haute. In 1892 served as draftsman with the Medart Patent Pulley Works at St. Louis, Mo. In 1893 returned to Terre Haute and became Secretary of the Terre Haute Car and Manufacturing Company. No record of his activities after 1898 at hand.

17. SHRADER, WILLIAM HENRY. 1886.

Entered Institute in March, 1883, at the age of 16, from Terre Haute; graduated in 1886 in the Mechanical Course. In 1887 was graduate student at the Royal Polytechnic in Berlin, and in 1888 changed to the University of Strassburg; in 1901 became assistant to Professor Kohlrausch in the Royal University of Strassburg. Returned to this country in 1892 and was made Assistant Professor of Physics in the University of Missouri. In 1893 became Professor of Electrical Engineering, which position he filled with distinguished ability until his death at Columbia, Mo., on August 13, 1896.

18. SULLIVAN, LUCIEN NORRIS. 1886.

Born at Indianapolis, Ind., April 16, 1864. Entered the Institute in March, 1883; graduated in June, 1886, from the Mechanical Engineering Course. Acted as rodman with the Missouri Pacific Railway in Missouri from 1886 to 1887. In 1887, draftsman for the San Diego & Coronado Beach Company at San Diego,

Calif., in 1888 draftsman of the Union Iron Works at San Francisco, and in 1890 draftsman of the Starr Milling Company at Crockett, Calif., remaining with them until his removal to Chicago, where he entered the Car Department of the C. & N. W. Railway, serving until 1894. In 1894 was made Inspector of Public Works for the City of Indianapolis. From 1895 to 1896 acted as Superintendent and Engineer with drainage contractors at San Antonio, Texas, and also had charge of the street improvements and paving of the City of Monterey, Mexico. In 1896 removed to Chicago, serving as draftsman for Fraser & Chalmers Manufacturing Company and the Fred W. Wolf Company. In 1898 was elected Instructor in Mechanical Engineering in the Lehigh University at Bethlehem, Pa., and in 1899 was with the Bethlehem Steel Works. During 1900 he traveled in Europe, and in 1901 returned to New York, serving with Babcock & Wilcox Boiler Company. From 1902 to 1906 he again served as Instructor of Metallurgical and Mining Design in Lehigh University. He spent the summer of 1903 in South America as Engineer, and in 1906 became Engineer of the Mines Division at Pachuca, Hidalgo, Mexico. In 1908 returned to the States, and is serving now on the General Staff of the War Department, in the Army War College at Washington, in connection with the translation of Spanish, French, German, and Italian works. He received the degree of M.S. from Lehigh University in June, 1905, and the degree of M.E. from Rose in 1908. Is a member of the A. S. M. E., A. A. A. S., N. G. S., and the Washington Society of Engineers. He was married in Washington, D. C., November, 1905.

19. WILKINS, JOHN THOMAS. 1886.

Entered the Institute September, 1883, from Terre Haute, age 20; graduated in the Mechanical Department in 1886. From 1887 to 1890 served with Root Bros., manufacturers of blowers, at Connersville. From 1890 to 1893 was draftsman for the P. H. & F. M. Roots Company at Connersville. In 1893 became Engineer for the Connersville Blower Company, manufacturers of rotary blowers, pumps, etc. Acquired a large interest in this concern, and has been identified with it to date. Was granted the degree of M.S. from Rose in 1893, and the M. E. degree in 1895. Member of A. S. M. E. Mr. Wilkins especially developed and holds patents on cycloidal form of blowers and pumps, the machinery for the manufacture of which was the subject of study and design for a number of years. Married.

20. AIKMAN, JOHN BARR. 1887.

Born at Washington, Ind., July 15, 1866; entered the Institute in September, 1883; graduated in June, 1887, from the Mechanical Engineering Department. Served as draftsman for I. D. Smead Company at Toledo, O., from August 1st to October, 1887. In 1887 became Cashier for the Colorado Midland Railroad at Leadville, Colo. The same year became Cashier for the Arkansas Valley Smelting Company., remaining in their service to March 1, 1889. In 1889 returned to Terre Haute, acquiring an interest in the firm of J. R. Duncan & Co., wholesale stationery and paper company, becoming Assistant Manager of the business in 1901. Upon the death of Mr. J. R. Duncan, became General Manager of the business, which, in 1905, was incorporated into the J. R. Duncan Paper and Stationery Company, of which company he is President and General Manager, also of several allied companies, dealers in supplies. Branch houses of this business are maintained at Mattoon and Decatur, Ill. Married December 5, 1888, at Terre Haute. Mr. Aikman was elected to the Board of Managers of the Rose Polytechnic Institute in 1898. His services in connection with the Alumni Association have been active and may be found in the roster of the Alumni officers.

21. BAUR, OSCAR. 1887.

Born September 9, 1867, at Terre Haute; entered the Institute September, 1883, and graduated in June, 1887. Became draftsman with E. P. Allis & Co. Reliance Works at Milwaukee, Wis., in July, 1887, and continued with them until June, 1888. From July to November, 1888, served with the Liquid Carbonic Company at Milwaukee. From 1889 to 1892 engaged in orange growing on a plantation at Tallahassee, Fla. Since 1892 has been engaged as General Engineer and Superintendent with the Liquid Carbonic Acid Company of Milwaukee, Chicago, Pittsburg, and New York. Married December 16, 1897.

22. COX, FRANK POWELL. 1887.

Born at Terre Haute, Ind., December 31, 1866; entered the Institute in September, 1883; graduated in the Mechanical Course in 1887. From 1887 to 1888 was graduate student at Johns Hopkins University. In 1889 became Electrician for the Kester Motor Company at Terre Haute. In 1890 entered service of the Thomson Electric Welding Company at Lynn, Mass.

In 1893 was transferred to the electric meter department of the Thomson-Houston Electric Company at Lynn, Mass. In 1895 became Electrical Engineer for the General Electric Company at Lynn, which position he holds to date. Married at Baltimore, June 7, 1888. Member of the A. I. E. E. Mr. Cox's work, especially in the Meter Department, while associated with the General Electric Company, was recognized by the awarding of the silver medal at the St. Louis Exposition, which he modestly states should have been divided among a number of the engineers who worked under him.

23. GOETZ, HERMAN FRED. 1887.

Entered the Institute in September, 1883, at the age of 16, from Terre Haute. Graduated in 1887 from Mechanical Department. After graduation became associated with the firm Temple & Goetz, planing mill, Terre Haute. From 1891 to 1894 engaged in business of furniture dealer with his father, F. Goetz. From 1895 to 1897 was engaged in brokerage business at Quincy, Ill. In 1897 took up study of medicine at Kirksville, Mo. He has been engaged in the practice of his profession since 1902 at St. Louis, Mo. Was Secretary-Treasurer of Alumni Association, 1887-90 and '91.

24. HIBBITS, FRANK NEY. 1887.

Entered Institute September 18, 1883, at the age of 18, from Muncie. Graduated in 1887. After graduation engaged as draftsman at Chattanooga, Tenn. In 1889 became Assistant Inspector for the C. C. C. & W. Railroad, Pullman, Ill. In 1890, Inspector of car and foundry work for the C. C. C. & St. L. Railroad, St. Louis. In 1891 was in the Drafting Department of the same railroad at Indianapolis. In 1892 entered the Engineering Department of the Erie Railroad Company at Susquehanna, Pa. In 1893 became Mechanical Engineer for the N. Y., L. E. & W. Division of the Erie Railroad at Susquehanna, serving until 1896. Then became Trainmaster of the Eastern Division of the Erie Railroad at Port Jervis, N. Y., remaining until 1899. Was then transferred to the Jefferson Division at Carbondale, Pa., in 1900. In 1901 was with the New York Division at Rochester, N. Y. From 1901 to 1904 was Mechanical Engineer for the Union Pacific Railway at Omaha, Neb., and in 1904 Mechanical Engineer of the Southern Railway at Washington, D. C.; in 1905 Mechanical Superintendent for the N. Y., N. H. & H. Railroad at New Haven, Conn. In 1907

became Superintendent of Motive Power of the Lehigh Valley Railroad at South Bethlehem, Pa. Thus Mr. Hibbits' service in railroad work extends from 1889 to date, with constant advancement.

25. MACK, JOHN GIVAN DAVIS. 1887.

Born at Terre Haute September 5, 1867. Entered Institute September, 1883; graduated in June, 1887. Entered Cornell University as graduate student in 1888. From 1889 to 1892 employed with the firm of Jones & Rogers, Mechanical Engineers, at Cincinnati; 1892 to 1893 with the firm of Jones & Mack, Mechanical Engineers, Cincinnati. In 1894 became Instructor in Engineering at the University of Wisconsin, Madison, Wis., and in 1901 was made Professor of Machine Design of the College of Engineering, University of Wisconsin. Given the degree of M.E., Cornell, in 1888. Member A. S. M. E. In addition to his work as Professor in the University of Wisconsin, Mr. Mack has had to do with engineering work and served in the Valuations for the Wisconsin Tax and Railroad Commission for the past five years, and is now in charge of the Mechanical Work on Railroads and Public Utilities, a commission of that State. He was married in 1903 at Cincinnati, O. In 1908 he represented the Alumni at Rose as Commencement speaker.

26. MERING, BARCLAY GEORGE. 1887.

Born at Cincinnati, Ohio, July 22, 1864. Entered Institute September, 1883; graduated in 1887. From 1888 to 1890 served as draftsman with the John T. Noye Manufacturing Company at Buffalo. From 1890 to 1892 with Theo. A. Elliott, Mechanical Engineer, at Buffalo. Engineer with R. Dunbar & Son, Eagle Iron Works at Buffalo, Architects and Contractors, from 1892 to 1897. From 1897 to 1900 acted as Mechanical and Consulting Engineer at Buffalo. From 1900 to 1904, Mechanical Engineer with the American Cereal Company at Chicago. From 1904 to 1907, associated as Grain Elevator Contractor with Barnard & Leas Manufacturing Company at Moline, Ill. From 1907 to date, Mechanical Engineer for the American Hominy Company, of Indianapolis. Married at Buffalo, N. Y., in 1895. Received degree of M.S. from Rose in 1897. Mr. Mering's larger work has been in connection with the building of brick and reinforced concrete grain elevators and power plants for the Quaker Oats Company, the American Hominy Company, etc.

27. PALMER, WILLIAM HENRY. 1887.

Born January 25, 1867, at Watseka, Ill. Entered Institute September, 1883; graduated in Mechanical Engineering in 1887. After graduation, with the Thomson-Houston Electric Company until 1890. From 1890 to 1891 was in the service of the Westrom Consolidated Dynamo and Motor Company at Baltimore. Owing to illness his work was interrupted, and he was not able to take it up again for some time. From 1891 to 1892 acted as clerk and telegraph operator with the P. D. & E. Railroad at Peoria. In 1892 became Superintendent of the Omaha Consolidated Electric Company. In 1893 entered service of the L., E. & St. L. Railroad at St. Louis, and from 1894 to 1899 was associated with the Missouri Edison Electric Company at St. Louis. His work there was especially in connection with underground and conduit work. From 1899 to 1900 was Engineer for the Great Northern Railway at St. Paul, Minn., doing experimental work in connection with train lighting system, remaining until 1906, when he established an office as Consulting Engineer. Acted as Engineer of Tests of Steam and Power Plants for the Tennessee Copper Company, Copperhill, Tenn. In 1907 became Master Mechanic of the I. & L. Traction Company at Scottsburg, Ind. From 1908, Manager and Secretary-Treasurer of the Zionsville Water and Electric Light Company. Married September 17, 1895, at Edgewater, Ill.

28. CHAPMAN, GEORGE HENRY. 1888.

Entered the Institute 1884, at the age of 17, from Indianapolis. Graduated in the Mechanical Engineering Course in 1888. After graduation, from 1889 to 1891, was with the Northwestern Lumber Company, of Eau Claire, Wis. In 1891 with the Montreal River Company, Gile, Wis. In 1892 returned to Eau Claire with the Northwestern Company. In 1902 was made Sales Manager, and in 1903 also Secretary of the Linderman Box and Veneer Company, Eau Claire. In 1905 was made General Manager of the Northwestern Lumber Company, Stanley, Wis., with which company he has served to date. No further personal record of Mr. Chapman is at hand.

29. DAVIS, GEORGE M. 1888.

Born December 22, 1868, at Waveland, Ind. Entered the Institute 1884. Graduated in the Mechanical Engineering Course in

1888. After graduation took up the study of law, receiving degree of LL.B. from the University of Michigan. He specialized in the practice of law along the line of railroads, mining, and corporation litigation together with expert and legal work in connection with the securing of United States patents and patent law litigation. He is associated with his father in a law office of Davis & Davis, of Terre Haute. He was married December 8, 1896.

30. HARING, HARRY D. 1888.

Born at Aurora, Ind., March 3, 1867. Entered the Institute 1884, and graduated in the Mechanical Engineering Course in June, 1888. In 1889 served with the Van Depoele Electric Manufacturing Company, of Chicago. In 1890 with the Sprague Electric Company, of Chicago. In 1891 with the United Edison Companies, of Chicago. In 1892 with the Edison General Electric Company, of Cincinnati. In 1893 with the Card Electric Motor and Dynamo Company, of Cincinnati. From 1894 to 1896 was Assistant to the Chief Engineer of the Fort Wayne Electric Company at Fort Wayne, Ind. From 1896 to 1899 was made agent for the Fort Wayne Company at Cincinnati. From 1899 to 1902 served in the Sales Department of the Western Electric Company, of Chicago, and in 1902 was made Indiana State Agent for the same company, with office at Indianapolis, serving in that capacity to date. He was married June, 1897, at Indianapolis.

31. HORD, FRANCIS TRIPLETT. 1888.

Entered from Indianapolis in 1884, age 17. Graduated in the Mechanical Engineering Course in 1888. After graduation spent a year in Europe. Then entered the law office of General Harrison in Indianapolis. In 1890 entered the University of Michigan as a student of law. Received the degree of LL.B. in 1892. In 1893 returned to Indianapolis, and was of the firm of Hord & Perkins, Attorneys at Law. Served as member of the Indiana Legislature in that year. In 1894 the firm became Hord, Perkins & Miller. Continued the practice of law until the time of his death, May 16, 1901. Was married in 1889 in Terre Haute. Delivered the first Commencement Address that represented the Alumni, in June, 1895. President of the Alumni Association, 1892.

32. KIDDER, CLINTON BAXTER. 1888.

Entered the Institute from Terre Haute 1884, at the age of 17, and graduated in the Mechanical Engineering Course in 1888. In 1889 entered the service of the Sprague Electric Equipment Company, of Chicago, working in connection with the installing of the electric street railway lines in Cincinnati, Ohio, for the Cincinnati Incline Plane Street Railway Company, and remained with that company as the Electrician in charge of their electrical equipment until 1890, when he returned to Terre Haute and entered the service of the Terre Haute Street Railway Company, installing electric equipment and erecting steam plant, and remained as Electrical Engineer in charge of same, also acting as Manager of the Willard Kidder Cooper Shops. In 1894 entered the service of the Overman Wheel Company at Chicopee Falls, Mass., manufacturers of the Victor bicycles, as Consulting Mechanical and Electrical Engineer, and later as Superintendent of the factory until 1899. He then entered the service of Stone & Webster, Consulting Engineers, of Boston, serving as Manager of the Street Railway and Lighting properties of the Terre Haute Electric Company, Brazil Electric Lighting Company, Edison Electric Illuminating Company, of Savannah, Ga., and Savannah Electric Company, until 1894; all of these were Stone & Webster plants. In 1904 he was engaged in installing electric hydraulic mining plants in the Yukon territories. From 1905 to date he has looked after the interests of farm properties belonging to his father, and also serves as Manager of the Northern Light Electric Company at Wahpeton, North Dakota. Was married in 1896. President of Alumni Association, 1894; Secretary-Treasurer, 1888.

33. MOORE, ALLEN HENRY. 1888.

Born at Rutland, Vermont, February, 1865. Entered the Institute in 1886 with Junior standing on credits from the University of Vermont. Entered from Danville, Ill., and graduated in the Mechanical Engineering Course in 1888. Entered the student course of the Thomson-Houston Electric Company at Lynn, Mass., in 1888. From 1889 to 1892 served as Erecting Engineer for the Thomson-Houston Company and the Thomson-Houston International Company in the United States, Mexico, Canada, and Germany until 1892. From 1892 to 1899 was Manager of the works of the Union Elektricitates Gesellschaft, Berlin, Germany. From 1899 to 1902 was Manager of the works of the

British Thomson-Houston Company at Rugby, England. He was recalled to America in 1902 by the General Electric Company to Schenectady, N. Y., where he has remained to date as Chairman of the Standardizing Committee. He is a member of the A. S. M. E. Was married in Boston, Mass., in 1891.

34. PEDDLE, JOHN B. 1888.

Born February 27, 1868, at Terre Haute. Entered the Institute in 1884; graduated in Mechanical Engineering Course in 1888. After graduation was with the Thomson-Houston Electric Company at Lynn, Mass., for one year and a half. Then a year with the Dodge Coal Storage Company at Nicetown, Pa. Three and a half years with the Worthington Hydraulic Company, Brooklyn, N. Y. From 1894 to date, teaching at Rose Polytechnic Institute, first as Instructor in Drawing Department, and since 1896 as Associate Professor and Professor of Machine Design. Married June 21, 1897, at Nashville, Tenn. Received M.S. degree in 1895, and M.E. in 1900, both from Rose. Was President of the Alumni Association in 1899, 1905, and 1906.

35. RAUCHFUSS, OSCAR R. 1888.

Entered the Institute in 1884 from Golconda, Ill., at the age of 18. Graduated in the Civil Engineering Course in 1888. In 1889 served as Engineer in the Maintenance of Way Department of the B. C. & E. Railroad at Belville, Ill. From 1890 to 1892 served as Assistant Engineer on the N. & K. Railroad, Cookeville, Tenn. In 1892 with the Baltimore City Passenger Railroad Company at Baltimore. From 1893 to 1896 was City Engineer of Joliet, Ill., and associated himself with Mr. Zinn in the firm of Rauchfuss & Zinn. From 1896 to 1899 was Engineer and Superintendent for Campbell & Davis, General Contractors, of Joliet. From 1899 to 1901 acted as Manager of the Diamond Soda Works, Milwaukee, Wis. From 1902 to 1903 served as Manager of the Liquid Carbonic Acid Gas Manufacturing Company at Milwaukee and Pittsburg. In 1903 entered the service of the Gulf Refining Company at Port Arthur, Texas, as District Sales Manager, removing to New Orleans in 1905, and died in the summer of 1906.

36. SCHOLL, JULIAN. 1888.

Born April 28, 1867, at Indianapolis. Entered the Institute September, 1884; graduated from the Mechanical Engineering

Course in 1888. From 1888 to 1890 served as machinist and draftsman for the Harrisburg Foundry and Machine Works at Harrisburg, Pa. Was engaged especially in automatic engine and steam roller design and construction. In 1890 entered the service of the Weston Engineering Company, manufacturers of automatic steam engines at Painted Post, N. Y. In 1891 established himself as Mechanical Engineer in New York City, also representing the Weston Engineering Company. He equipped many of the large buildings in New York with complete steam and power plants. Still interested in the design of road machinery, he continued his work along that line. In 1893 began the building and manufacturing of a line of road machinery, which developed in the Universal Steam Rollers and Reliance Stone Crushers, exhibited at the World's Fair in St. Louis. He has continued to date in the design and development of road machinery under style of Julian Scholl, of New York.

37. WATERS, EDWARD GUY. 1888.

Born in Peru, Ind., in 1866. Entered the Institute from Terre Haute September, 1884; graduated from the Mechanical Engineering Course in 1888. In the year 1888 to 1889 was a graduate student at Rose, and also acted as Laboratory Instructor. In 1890 entered the service of the Thomson-Houston Electric Company at Lynn, Mass., and from 1891 to 1896 was Manager of the Pittsburg office. From 1896 to 1903 he was Assistant to the First Vice President of the General Electric Company at New York. From 1903 to 1906 was Manager of the Commercial Department of the British Thomson-Houston Company, Ltd., Rugby, England. In March, 1906, was recalled to Schenectady, N. Y., as Assistant to the First Vice President and Secretary of the Sales Committee of the General Electric Company. This position he occupies to date. He is a member of the A. I. E. E. Was married in 1893 at Terre Haute, Ind. For nineteen years has been in the service of the General Electric Company.

38. WELLER, EDWARD ANDERSON. 1888.

Entered the Institute 1884 from Canonsburg, Pa., at the age of 18; graduated from the Mechanical Course in 1888. In 1889 entered the service of the United States Scale Works, of Terre Haute, in the capacity of Superintendent. From 1890 to 1892 served with the Carnegie-Phipps Company at Pittsburg, Pa. From 1892 to 1894 with Schoenberger & Co. Juanita Iron and Steel Works, Pittsburg. In 1894 served with the Linden Steel

Company, Pittsburg. In 1895 with the Mackintosh, Hemphill Company, Pittsburg. 1895 to 1896 with the Jones & Laughlin Company at Pittsburg. From 1896 to 1899 with M. E. Anderson Foundry and Machine Works, Anderson, Ind. From 1899 to 1901 was Mechanical Engineer with the Illinois Steel Company at Chicago. From 1901 to 1906 Mechanical and Electrical Engineer for Hoover & Mason, Contracting Engineers, of Chicago. From 1906 to 1907 Superintendent of the Berger Manufacturing Company, Canton, Ohio, remaining with this company to date as Mechanical Engineer, with office in Chicago, Ill. Mr. Weller is married, although the date and place of marriage have not been reported.

39. GALLOWAY, JOHN DEBO. 1889.

Entered the Institute 1885 from Napa City, Cal., at the age of 16. Graduated from the Civil Engineering Course in 1889. After graduation served as transitman for the Fairhaven & Southern Railroad, Fairhaven, Wash. In 1891 became Assistant Engineer for the Great Northern Railroad at Fairhaven, and in 1892 with the Whatcom County Tide Lands. From 1892 to 1896 was Chief Engineer for Healy, Tibbits & Co., bridge builders and contractors, San Francisco. In 1896 established the firm of Galloway, Townley & Co., Engineers and Contractors. In 1897 was with the Pacific Rolling Mill Company. From 1898 to 1900 acted as Instructor in Mechanical and Architectural Drawing, California School of Mechanical Arts. In 1900 became Engineer for Colusa Stone Company. Since 1901 his work has been that of Consulting Engineer, with office in San Francisco. Mr. Galloway's work has been in both structural and hydraulic engineering, having designed and had charge of large works in the West.

40. GILBERT, ELMER ELLSWORTH. 1889.

Entered the Institute September, 1885, from Gettysburg, Ohio, at the age of 21. Graduated from the Mechanical Engineering Course in 1889. Entered the service of the Thomson-Houston Electric Company as apprentice in Boston. From 1891 to 1893 served in the Isolated Lighting Department of the Thomson-Houston Company in New York City. From 1893 to 1898 with the General Electric Company, New York City. From 1898 to 1903 Assistant to General Manager Lighting Department, and from 1903 to date, Sales Manager in the Turbine Department of the General Electric Company at Schenectady, N. Y. His work

is both of the engineering and business kind. Is a member of the A. I. E. E. He has been for twenty years in the service of the General Electric Company.

41. HAMMOND, ALONZO J. 1889.

Entered the Institute September, 1885, from Frankfort, at the age of 16, and graduated in 1889 from the Civil Engineering Course. From July, 1889, to September, 1890, was City Engineer of Frankfort, and served as draftsman in his father's office, who is a practicing architect. From 1890 to 1891 took a graduate course in the M. I. T. From 1891 to 1898 again served as City Engineer of the City of Frankfort, at the same time carrying on architectural practice. From 1898 to 1901 acted as Assistant to Chief Engineer of the Vandavia Railroad, especially in terminal work for the city of South Bend. In 1901 he was made City Engineer of South Bend, which office he has occupied to date. During all this time has carried on a consulting engineering practice together with discharging his duties as City Engineer. Designed a system of sewers for Sullivan, Ind., and Dowagiac, Mich., in the early years of his practice, later on designing a waterworks system, electric light system for Berrien Springs, Mich., and other plants in Michigan and Northern Indiana. Served as Consulting Engineer for the Elkhart Power Company for the development of water power. Also acted as Chief Engineer for some of the electric roads out of South Bend, for the Northern Indiana Railroad, and was Engineer of Bridges for St. Joseph County. Some more important works were the Jefferson Street concrete arch highway bridge, South Bend, and several other bridges of magnitude. He was granted degree of M.S. in 1894 and degree of C. E. in 1898, both from Rose. He served as President of the Indiana Engineering Society and is a member of the A. S. C. E. Was married in 1893 in Cincinnati, Ohio.

42. HENDRICKS, VICTOR K. 1889.

Born in Indianapolis May 28, 1869. Entered the Institute September, 1885. Graduated from the Civil Engineering Course in 1889. From 1889 until 1890 served as draftsman for the Edge Moor Bridge Works, Wilmington, Del. In 1890 Recorder on United States Coast and Geodetic Survey, Charleston, S. C. 1890 to 1892 draftsman and transitman on construction, Fairhaven & Southern Railroad, at Fairhaven, Wash. 1892 to 1893 Assistant Engineer in charge of construction, Bellingham Bay

& Eastern Railroad, at Fairhaven, Wash. In 1893 draftsman at Indiana Bridge Works, Muncie, Ind., and at Lafayette Bridge Works, Lafayette, Ind. 1893 to 1894 Assistant Engineer T. H. & I. Railroad Company, Terre Haute. 1894 to 1902 Engineer Maintenance of Way of the Michigan Division of the Vandalia Railroad Company, Terre Haute and Logansport. From 1902 to 1905 Assistant to Engineer Maintenance of Way B. & O. Railroad, Baltimore, Md. 1905 to 1907 Division Engineer, Baltimore Division. 1907 to 1909 Assistant Engineer Maintenance of Way, Frisco Lines, St. Louis, Mo. 1909 to date Office Engineer, Frisco Lines, St. Louis, Mo. President of Alumni Association, 1896. Representative on Board of Managers, 1899 and 1901. Received degree of M.S. from Rose in 1900. Is associate member A. S. C. E. Member of the American Railway Engineering and Maintenance of Way Association and other railway clubs. Married May 28, 1909, in Terre Haute. Mr. Hendricks's work has been mainly in railway maintenance. He made some special investigations in the matter of timber preservation while in the employ of the B. & O. Railway.

43. HOLDING, HERBERT HOLMES. 1889.

Entered the Institute from Paris, Ill., in 1885, at he age of 17, graduating in the Mechanical Engineering Course in 1889. With the Thomson-Houston Electric Company at Lynn, 1890, at Boston, 1891-2, and Cincinnati in 1893. Then with the General Electric Company at Cleveland in 1894. In 1895 to 1898 Electrician for the Lorain Steel Railway Company, Lorain, Ohio. In 1898 Manager of the Cleveland office of the Eddy Electric Manufacturing Company. From 1899 to 1902 Vice President of the Pelton Engineering Company, Cleveland. 1903 to 1908 Vice President Bosworth-Dilley-Holding Company, Cleveland, Ohio. 1909, Sales Manager for the Cleveland Feed Water Regulator Company.

44. JONES, THEODORE D. 1889.

Entered the Institute September, 1885, from New Harmony, age 19; graduated from the Civil Engineering Course in 1889. In 1890 with the L. & N. and O. & J. Railroad, Memphis, remaining until 1892. In 1892 Resident Engineer of the Danville & East Tennessee Railroad Company, Bristol, Tenn. From 1893 to 1896 practiced civil engineering and surveying in Jacksonville

and Tampa, Fla. In 1898 Resident Engineer Canon City & Cripple Creek Electric Railway Company, Canon City, Colo. In 1900 with the Oxnard Construction Company, Ames, Neb. In 1901 Assistant Engineer on Location and Construction of the Colorado Midland Railway. In 1902 Assistant Engineer Taylor Park Railroad on preliminary surveys, Aspen, Colo., remaining until 1905. Then Engineer Cananea Yaqui Pacific, Santiago Xquintia, District de Tepic, Mexico. In 1907 Chief Engineer G. & N. R. & U. Railroad, Greeley, Colo., which position he has occupied to date. Personal notes of Mr. Jones are not furnished.

45. **McKEEN, WILLIAM RILEY, JR.** 1889.

Born in Terre Haute, Ind., October 7, 1869. Entered the Institute in 1885, graduating in 1889 in the course of Mechanical Engineering. After graduation attended Johns Hopkins Institute for a two years' course in electrical engineering. In 1890 and 1891 pursued an advanced course in electricity and mechanical engineering at a polytechnic institute in Berlin, Germany. After traveling in Europe, returned to America, entering the car shops of the P. C. C. & St. L. Railroad at Columbus, Ohio, and became Master Car Builder of the T. H. & I. Railroad in 1893. Then Superintendent of the car and locomotive shops of the T. H. & I. Railroad, remaining until 1898. He then became Vice President of the P. V. Manufacturing Company. In December, 1898, entered the service of the Union Pacific Railroad, becoming District Foreman at North Platte, Neb. May 1st was made Master Mechanic of the Wyoming Division at Cheyenne, Wyo. In June, 1902, appointed Superintendent of Motor Power and Machinery of the Union Pacific, with headquarters at Omaha. He continued in this position until 1908, and resigned to become President and General Manager of the McKean Motor Car Company, to build the well-known and successful gasoline railway motor cars, known as the McKean Car. In 1896 he was granted the degree of M.S. from Rose and in 1907 the degree of M.E. President of Alumni Association, 1895. He is a member of the New York Railway Club, the Chicago Railway Club, and the A. S. M. E. Mr. McKean's original work has been especially in the direction of designing and constructing his gasoline motor car, gasoline weed burner, gasoline switching locomotives, and the introduction and development of the use of steel shapes in box car, passenger coach, and mail car construction. His work along this line is recognized as pioneer work.

46. ROBERTS, DONN M. 1889.

Entered the Institute September, 1885, from Terre Haute, at the age of 18, and graduated from the Mechanical Engineering Course in 1889. In 1890 he was elected City Engineer of Terre Haute, and from 1891 he was associated with Kelley, Roberts & Smith, Lawyers, of Terre Haute. From 1892 to 1898 he operated in real estate claims, and from 1898 to 1906 has done contracting work as Manager of the Indiana Construction Company and Roberts & Co., Engineers and Contractors, of Terre Haute. Married.

47. WILEY, WALTER BROWN. 1889.

Born in Terre Haute, Ind., September 20, 1866. Entered the Institute September, 1885, and graduated from the Chemical Department in 1889. In September and October, 1889, was Volunteer Assistant, U. S. Department of Agriculture, Division of Chemistry. October, 1889, to March, 1890, Chemist Belle Terre Sugar House, Donaldsonville, La. March, 1890, to November, 1901, Assistant in Laboratory, Illinois Steel Company, Milwaukee, Wis. November, 1891, to June, 1893, Chemist Coke Laboratory, Illinois Steel Company, Mt. Pleasant, Pa. 1893 to 1895 Chemist and Coke Inspector, Illinois Steel Company, Bramwell, W. Va. 1895 to 1897 Coke Inspector and Car Agent, Illinois Steel Company, Mt. Pleasant, Pa. 1897 to 1899 Chemist Union Works, Illinois Steel Company, Chicago, Ill. 1899 to 1903 Chemist and Coke Inspector and Car Agent, Illinois Steel Company, Bramwell, W. Va. 1903 to 1905 Chemist and Fuel Engineer, United States Coal and Coke Company, Gary, W. Va. 1905 to date fuel and expert and sampling of materials, So. Works, Illinois Steel Company, Chicago, Ill. Is a member of the A. C. S. Married July 13, 1893. Mr. Wiley is the first graduate in the Chemical Course from the Rose Polytechnic Institute, and has been engaged in a special line of work in connection with fuel engineering, especially to improve the quality of coke and the investigation of coking coals. Commencement speaker, 1901.

48. AUSTERMILLER, JOHN AUGUST. 1890.

Entered the Institute September, 1885, from Terre Haute, Ind., at the age of 16, and graduated in the Mechanical Engineering Course in 1890. After graduation took service with the Vandalia Railroad in the freight offices. Later became associated with Allen & Austermilller, operating boiler and machine shop

in Terre Haute. In 1897 was employed in the office of City Engineer of Terre Haute, Ind., in which position he remained until 1908, when he became Deputy Revenue Collector at Terre Haute, Ind.

49. COLLETT, SAMUEL DUNLAP. 1890.

Entered the Institute September, 1886, from Newport, Ind., at the age of 17, and graduated in the Mechanical Engineering Course in 1890. From 1890 to 1891 took a special civil engineering course in the Rose Polytechnic Institute, for which he received degree of B.S. in civil engineering. In 1892 entered the service of the Thomson-Houston Electric Company at Lynn, Mass., and from 1893 to 1895 was with the Pennsylvania General Electric Company at Pittsburg. In 1895 became associated with the Metropolitan Telephone and Telegraph Company in New York, and in 1898 was made Eastern Manager of the Elevator Supply and Repair Company in New York, remaining with the company until 1905, when he became Vice President and Eastern Manager of the Electric Supply and Repair Company, which position he holds to date. He was granted degree of M.S. from Rose in 1894. President of Alumni Association, 1898. Is associate member of the A. I. E. E., a member of the A. S. M. E. and Engineering Club of Manhattan, Building Trade Club of Manhattan, Blue Room Engineering Club of Manhattan, the N. G. S., and various social clubs. Mr. Collett equipped some of the largest buildings in New York with elevators, pumps, etc. April 12th Mr. Collett registers himself as not married. From a social column of the *Brooklyn Eagle* it is judged that this information will speedily have to be amended.

50. CONDRON, THEODORE LINCOLN. 1890.

Entered the Institute in 1886, at the age of 20, from Washington, D. C., and graduated from the Civil Engineering Course in 1890. In 1891 became Assistant Engineer with the Burlington Bridge Company, Burlington, Iowa. In 1892 Assistant in the Testing Laboratory, Washington University, St. Louis. In 1893 in Chief Engineer's office, St. Louis, Merchants' Bridge and Terminal Company. In 1894 became Assistant Engineer with Edw. Flad, C. & M. E., St. Louis. In 1895 to 1901 Resident Engineer, Pittsburg Testing Laboratory, Chicago. In 1902 he opened an office as civil engineer in Chicago, but retained his connection with the Pittsburg Testing Laboratory. In 1905 he severed his connection with the Pittsburg Laboratory, and con-

tinued in the practice of civil engineering. In 1906 he associated himself with Mr. Sinks, of the Class of '96, under the firm name of Condron & Sinks Company, Civil Engineers, Chicago. Of this firm Mr. Condron is President. He was married in Terre Haute, Ind. He was given the degree of M.S. from Rose in 1894. Is a member of the A. S. C. E., S. W. E., A. S. M. W., and other engineering societies. Served as Alumni representative on the Board of Managers, 1905 to 1907. Has been active in all work pertaining to the improvement and betterment of the Institute. His consulting engineering work has been in connection with some of the most important structures, and has extended from coast to coast.

51. ELDER, WILLIAM DATUS. 1890.

Entered the Institute in 1887, at the age of 19, from Kalamazoo, Mich., and graduated in the Civil Engineering Course in 1890. From 1890 to 1891 he was Assistant Engineer for the Northern Pacific Railroad, St. Paul. 1892 to 1899 Assistant City Engineer, Kalamazoo. From 1900 to 1903 Assistant Engineer with the Michigan Central Railroad, Niles, Mich. 1903 to 1905 Draftsman Chief Engineer's office Michigan Central Railroad, Detroit, Mich. From 1905 to date Assistant Chief Engineer Detroit River Tunnel Company, Detroit. Mr. Elder received degree of M.S. from Rose in 1893. He was married November 1, 1901.

52. FITCH, MAXWELL BRYON. 1890.

Born in Greenville, Ill., March 23, 1869. Entered the Institute in 1886, and graduated in the Mechanical Engineering Course in 1890. Immediately after graduation was put in charge of the field corps of the Terre Haute & Logansport Division of the Vandalia Railroad, and remained in the service until 1892, when he was appointed Assistant City Engineer of Terre Haute. In 1893 was made City Engineer of Mattoon, Ill., where he remained until 1896. From 1896 to 1898 was in the employ of the Graphic Mining and Smelting Company, Magdalena, N. M., serving both as Metallurgist and Engineer. In 1897 he was made Superintendent of the smelting works, serving in this capacity until 1903. From 1904 to 1906 he served as Manager of the Southwestern Lead and Coal Company, Engle, N. M. From 1906 to date he has carried on the business of mining engineering at El Paso, Tex. Is married, but date unknown. A member of the A. S. M. E.

53. GALLOWAY, MASON. 1890.

Entered the Institute in 1886 from Chico, Cal., at the age of 23, and graduated from the Mechanical Engineering Course in 1890. In 1891 he was with the Thomson-Houston Electric Company, Lynn, Mass. From 1892 to 1900 Electrician Marion Electric Street Railway, Marion, Ind. From 1900 to 1903 Assistant to Electrical Engineer, Snoqualmie Falls Power Company, Seattle, Wash. 1906 with the Nevada Power and Mining Company, Columbia, Nev. From 1906 to date he has been engaged in engineering work, mostly in Arizona, where he is compelled to remain because of the condition of his health.

54. HESS, OTTO GEORGE. 1890.

Entered the Institute in 1886 at the age of 19, and graduated in 1890 in the Mechanical Engineering Course. Immediately after graduation in 1891 became Engineer of the refrigerating plant of the Reymann Brewing Company, Wheeling, W. Va. In 1892 was made Chief Engineer of all their works, which position he occupies to date.

55. LEFLER, HARVEY JAMES. 1890.

Entered the Institute in 1887 from Cincinnati, O., at the age of 18; graduated in Civil Engineering Course in 1890. In 1891 was made Resident Engineer with the Cincinnati Southern Railroad. In 1893 removed to Anderson, Ind., and in 1897 to Indianapolis. In both places he engaged in general manufacturing business. In 1898 he removed to New York, becoming Engineer with the Metropolitan Street Railway Company, where he has lived to date, engaged in general contracting and engineering work. Is unmarried. Mr. Lefler while in New York had charge of the construction of the underground trolley for the Metropolitan Company, and during the Spanish-American War had charge of the fortifications of Fort Slocum, at New York Harbor. Was engaged in river and harbor improvements in New York, and for the last ten years has been engaged mainly in building constructions in New York City.

56. PUTNAM, GEORGE ROCKWELL. 1890.

Born at Davenport, Ia. Entered the Institute in 1887 at the age of 22; graduated in the Mechanical Engineering Course in 1890. After graduation assisted in the Coast and Geodetic Survey, and remained in government service to date. He received

the degree of M.S. from Rose in 1894. Member M. S. C. E., Washington Academy of Science, Washington Philosophical Society, Washington Society of Engineers, and several social clubs. Is unmarried. Was on Mexican and Alaskan boundary surveys; accompanied expedition to Greenland as astronomer in 1896; engaged on survey of Pribilof Islands in 1897, and of the delta of the Yukon River, 1898-99; made observations connecting American and European gravity stations, 1900; Director of Coast Surveys in the Philippine Islands in 1900-06. His original work was in a transcontinental series of measurements of the force of gravity; planning the survey of the coasts of the Philippine Islands; planning the survey of the delta of the Yukon River, Alaska, and designing of charts of the Philippine Islands, Alaska, and the United States. His publications are: Nautical Charts, Wiley & Sons, New York, 1908; Papers in Annual Reports of Coast and Geodetic Survey; Proceedings of Philosophical Society of Washington, and Engineering News.

57. RAYMOND, STEPHEN SPINNING. 1890.

Entered the Institute in 1886, at the age of 16, from Cincinnati, O., and graduated in the Mechanical Engineering Course in 1890. After graduation spent a year in Montana, and in the fall of 1891 took a graduate course in mining in the Columbia College, in New York. In 1893 served with the Anaconda Smelting Works at Anaconda. In 1894 had charge of the Electrolytic Refinery of the Anaconda Mining Company. In 1895 was made President and General Manager of the Madison Mining and Milling Company, Sappington, Mont. In 1898 was Chief Assayer Montana Ore Purchasing Company, Butte, Mont.; 1899 to 1902, General Superintendent Copper King Company, San Francisco, Cal.; 1903, Mining and Metallurgical Engineer, San Francisco. Since 1903 no record has been furnished of his activities.

58. SHOVER, BARTON ROY. 1890.

Entered the Institute in 1885, at the age of 18. In 1886 was compelled to withdraw from the Institute on account of affection of eyes. Reëntered in 1887, and graduated in the Mechanical Engineering Course in 1890. After graduation entered the laboratory of Carpenter-Nevins Electric Heating Company, Minneapolis. In 1891 was Electrician for the Electric Street Railway, Richmond, Ind.; 1892, Electrician for the Citizens' Street

Railway, Indianapolis; 1893, Superintendent of the Neptune Electric Company, Asbury Park, N. J.; 1894, Electrician Youngstown Street Railway Company, Youngstown, O.; 1895, with the Ohio Steel Company, Youngstown; 1897, Assistant Electrician Ohio Steel Company; 1900, Electrician Ohio Steel Company; 1902 to 1906, Electrical Superintendent Ohio Works, National Steel Company; 1907 to date, Electrical Engineer Indiana Steel Company, Gary, Ind. Mr. Shover was given the degree of M.S. from Rose in 1895. Member of the A. I. E. E. Mr. Shover's most important work has been planning and installing the electrical plant for the transmission of electric power at the Gary plant of the Indiana Steel Company, the largest plant of this kind in the world.

59. THOMPSON, RALPH FOWLER. 1890.

Entered the Institute in 1886 from Bradford, Ill., at the age of 19; graduated in the Mechanical Engineering Course in 1890. After graduation served with the Edison Electric Company of Chicago until 1892, and removed to Montana, where he remained from 1892 to 1896 as Electrical Engineer in Marysville and Helena. From 1896 to 1899 he served as Superintendent of the Electric Light and Waterworks at Alexandria, La. There is no record at the Institute of Mr. Thompson's location or work after this date.

60. THURSTON, EDWARD CHASE. 1890.

Entered the Institute in March, 1883, from Indianapolis, at the age of 16. Withdrew from the Institute in October. Reentered in September, 1886, and graduated from the Mechanical Engineering Course in 1890. After graduation entered the firm of Moore & Thurston, operating an electrical plant and manufacturing chain pumps at Rockville, Ind. In 1892 was with the firm of W. A. Fulwider & Co., operating planing mills in Bloomington, Ind. In 1893 entered as draftsman with the Brown & Sharpe Manufacturing Company, Providence, R. I. No response has been received from him after 1897.

61. TSUJI TARO. 1890.

Entered the Institute in 1888 from Tokio, Japan, at the age of 19; graduated in Civil Engineering Course in 1890. After graduation became Assistant Engineer with the firm of Waddell & Hedrick on the Pacific Short Line Bridge in Sioux City, Ia. In

1901 he returned to Japan and became Civil Engineer in government service. In 1903 became Engineer of the Imperial Government Railroads in the Ministry of Communications. In 1908 was given the entire charge of government railways. Received degree of M.S. in 1892 and C.E. in 1896, both from Rose. Is married. Mr. Tsuji had charge of the military railway construction during the Russian-Japanese War. He has retained all his interests in Rose, and has attained a high position in government service.

62. BALSLEY, ABE. 1891.

Entered the Institute in 1887 from Bedford, Ind., at the age of 22, and graduated in the Mechanical Engineering Course in 1891. From 1891 to 1893, Expert Department General Electric Company, Lynn, Mass.; 1893 to 1894, Ship Electrician United States and Brazil Mail Steamship Company, New York; 1894 to 1896, Superintendent Seymour Ice and Light Company, Seymour, Ind.; 1896 to 1901, Chief Electrician and Superintendent of Lighting, Terre Haute; 1901 to 1903, Operating Superintendent Lachine Rapids Hydraulic and Land Company, Montreal; 1903 to 1905, Electrical Engineer Georgia Railway and Electric Company, Atlanta, Ga.; 1905 to 1907, Superintendent of Motive Power, Sao Paulo Tramway, Light and Power Company, Brazil, S. A.; 1908, special work, examinations and reports on electric properties; 1909, with the Edison Company, Chicago, Operating Engineer's Department. Mr. Balsley was given the degree of M.S. from Rose in 1904. Is associate member of A. I. E. E. and associate member of C. S. C. E. Some of his most important work is in connection with large water power and transmission systems, street railway systems, and car installation work. Mr. Balsley spent a year and a half in Brazil, S. A., and spent some months traveling in Europe. Was married in 1900 in Indianapolis.

63. BOEHM, WILLIAM H. 1891.

Entered the Institute in September, 1887, from Memphis, Tenn., at the age of 19, and graduated in the Mechanical Engineering Course in 1891. From the time of graduating to 1893 was a graduate student at Cornell University. From 1893 to 1897 was Mechanical Engineer and Draftsman, Chickasaw Iron Works, Memphis, and St. Louis Water Works, St. Louis, and Instructor in Mechanical Engineering, Washington University. From 1897 to 1901, Professor of Engineering and Director of Engineering

School, Clemson College, the State College of South Carolina. From 1901 to date, Superintendent Steam Boiler and Fly Wheel Department, Fidelity and Casualty Company, New York. Mr. Boehm was granted the degree of M.M.E. in 1893 from Cornell. Is a member of the A. S. M. E. Was married September 20, 1897. Mr. Boehm's more important work has been machine and steam engine designing and the organizing and establishing of a Fly-wheel Insurance Department. His publication on "Fly-wheel Fractures" is authoritative. Commencement speaker in 1900.

64. BUCKLEY, FREDERICK JAMES. 1891.

Entered the Institute in 1888 from Kalamazoo, Mich., at the age of 21, and graduated in the Mechanical Engineering Course in 1891. From 1891 to 1901 was Mechanical and Electrical Manager for the Buckley Electric and Manufacturing Company, Kalamazoo. In 1903, Secretary and Manager for the Buckley Electric and Manufacturing Company. In 1904, President and Manager of the Kalamazoo Foundry and Machine Company, Kalamazoo, which position he holds to date.

65. CAROTHERS, GEORGE ROBERT. 1891.

Entered the Institute in 1888, and graduated in Mechanical Engineering in 1891. In 1892 was Instructor in Drawing and Superintendent of Shops, Manual Training School, Honolulu. From 1893 to 1896, Director Manual Training Department, Public Schools, Tacoma, Wash. From 1896 to 1899, Principal Lowell Manual Training School, Lowell, Mass. In 1899, with William Sellers & Co., Philadelphia. No further record of Mr. Carothers has been received at the Institute.

66. COX, JOHN STRAIN. 1891.

Entered the Institute from Terre Haute, Ind., in 1886, at the age of 16, and graduated from the Mechanical Engineering Course in 1891. In 1892 was Assistant Superintendent of the Terre Haute Car and Manufacturing Company, Terre Haute. From 1893 to 1896, Secretary of the Terre Haute Car and Manufacturing Company, Terre Haute. From 1896 to 1901, Superintendent of the Terre Haute Car and Manufacturing Company, Terre Haute. From 1902 to date, President of the Terre Haute Automobile Company. Mr. Cox was married in Terre Haute, Ind., in 1892.

67. GILLETT, VERNOR JOHN. 1891.

Entered the Institute from Eckford, Mich., in 1887, at the age of 18; graduated in the Mechanical Engineering Course in 1891. In 1892 was with Frank B. Race, Electrical Engineer, Detroit, Mich. In 1893 was Assistant Manager with Frank B. Race. From 1894 to 1897 was with the firm of Cameron & Gillett, Contractors, Detroit. From 1898 to 1900, Superintendent of the Detroit Galvanizing and Sheet Metal Works, Detroit. In 1901 with the DeLaval Separator Company, Eckford, Mich. In 1902, Editor of the *Calhoun County Farmer*. From 1903 to 1906, Advertising Manager of the Phosphite Ford Company, Detroit. From 1907 to date, Assistant Engineer American Electromobile Company, Detroit Mich. Mr. Gillett was married in Terre Haute, Ind.

68. HARPER, JOSEPH DURFEE. 1891.

Entered the Institute from Durango, Col., in 1888, at the age of 21, and graduated in the Mechanical Engineering Course in 1891. In 1892 was with the Thomson-Houston Electric Company, Cincinnati, O. From 1894 to 1896, of the firm of Harper & Harper, Civil and Mining Engineers, Durango, Col. From 1896 to 1899, Instructor in Civil Engineering at the Rose Polytechnic Institute. From 1899 to 1901, Professor of Mechanical Engineering and Director of Shops, Kansas Agricultural and Mechanical College, Manhattan, Kan. From 1901 to 1907, Assistant Manager Fairbanks, Morse & Co., St. Louis. From 1908 to date, President of the Texas Machinery and Supply Company, Dallas, Tex. Mr. Harper was granted the degree of M.S. in 1897 from Rose. For the last few years he has given much attention to the development and introduction of producer gas and oil engines, for high-grade power purposes, electric light and power installations, waterworks plants, refrigeration equipment, and all having internal combustion engines as the prime mover. Mr. Harper was married at Fort Wayne, Ind., November 17, 1897.

69. HARRIS, WILLIAM HERSCHEL. 1891.

Entered the Institute in 1887, at the age of 17, and graduated in the Civil Engineering Course in 1891. In 1892 was Assistant Draftsman for the American Terra Cotta Company, Chicago. From 1895 to 1900 was County Surveyor, Terre Haute, Ind. From 1900 to date has been engaged in general construction work as a Contractor, building pike roads, paving brick streets,

and is now putting in a sanitary sewerage system for the city of Bloomington, Ind. Mr. Harris was married in Brazil, Ind., in 1905.

70. HUPE, ALEXANDER LOUIS. 1891.

Entered the Institute from Louisville, Ky., in 1887, at the age of 16, and graduated in the Mechanical Engineering Course in 1891. In 1892 was a graduate student at Cornell University. In 1893, Draftsman for L., St. L. & T. H. R. R. Co., Louisville, Ky. In 1895, with Herman Meth, Consulting Engineer, Louisville. From 1896 to 1898, Draftsman with Louisville Bridge and Iron Company. From 1898 to 1901, Assistant Engineer for the Louisville Bridge and Iron Company; 1903, Chief Draftsman for the Louisville Bridge and Iron Company; 1907, Assistant Engineer for the Louisville Bridge and Iron Company; 1908 to date, Assistant Engineer Louisville Water Company, Louisville, Ky.

71. HURLBERT, FRANK WYMOND. 1891.

Entered the Institute from Aurora, Ind., in 1887, at the age of 17, and graduated from the Mechanical Engineering Course in 1891. In 1892 and 1893 was Electrician with the Detroit Electric Works, Detroit, Mich. In 1894 was Assistant Superintendent of the Detroit Citizens' Street Railway Company, Detroit. In 1895, Railway Expert, with the Brush Electric Company, Cleveland, O. In 1896, Assistant Engineer with Gilbert Wilkes, Consulting Electrical and Mechanical Engineer, Detroit. In 1897, with the General Electric Company, Schenectady, N. Y. From 1898 to 1903, Engineer in the Railway Engineering Department, General Electric Company, Schenectady. From 1903 to date, Engineer in Foreign Department, General Electric Company, New York City, N. Y.

72. JONES, HORACE BENEMEN. 1891.

Entered the Institute from Terre Haute, Ind., in 1887, at the age of 17, and graduated in the Mechanical Engineering Course in 1891. In 1893 with the Premier Steel Works, Indianapolis, Ind. In 1895 with Herbert Foltz, Architect, Indianapolis. From 1896 to 1899, Mechanical Draftsman, Indianapolis. In 1901 with G. H. Patterson, Mining Engineer, Terre Haute. In 1905 with the B. & O. R. R. Co., Cincinnati, O. Since 1905 no record has been received.

73. MCCABE, EUGENE FRANCIS. 1891.

Entered the Institute from Renovo, Pa., in 1887, at the age of 22; graduated in the Mechanical Engineering Course in 1891. In 1892 and 1893 with the Snead & Co. Iron Works, Louisville, Ky. From 1894 to 1896 with the General Electric Company, Schenectady, N. Y.; 1896 to 1902, Superintendent Electric and Gas Properties in Chatham, N. Y. From 1902 to date, General Manager and Vice-President Mifflin County Gas and Electric Company, Lewistown, Pa. Is a member of the A. I. E. E., A. G. I., N. E. L. A., and Pennsylvania Electric Association. Some of the more important works engaged upon were Superintendent of the iron construction on the Congressional Library at Washington, and the designing and construction of several gas and electric plants. Was married in Renovo, Pa., in 1896.

74. MCCORMICK, ROBERT LEE. 1891.

Entered the Institute from Charlestown, Ind., in 1888, from Indiana University, at the age of 21, and graduated in the Civil Engineering Course in 1891. Since his graduation he has been Associate Professor of Mathematics and Civil Engineering at the Rose Polytechnic Institute. Was granted degree of M.S. in 1906 and C.E. in 1907, both from Rose. Is a member of the A. Ry. E. and M. W. A. Mr. McCormick was married in Terre Haute, Ind., in 1894. Mr. McCormick has done a considerable amount of engineering work outside of his work as Professor in the Institute. In 1890 was with the United States Coast and Geodetic Survey in primary triangulation. In the summer of 1892 Engineer for the Bedford Belt Railroad. In 1896 in the City Engineer's office, Terre Haute. In 1897 took advanced mathematical work in University of Chicago. In 1899 and 1902 engineering work on West Side Elevated Railroad, Chicago. In 1901 in the Pittsburg Testing Laboratory, and later with the firm of Condron & Sinks. Among other things, he has designed a reinforced concrete arch. He also had charge of the engineering work in a group of mines in districts surrounding Terre Haute. Mr. McCormick was President of the Rose Alumni Association in 1900, 1903, and 1904.

75. MENDEN, WILLIAM STEVENS. 1891.

Entered the Institute in 1887 from Evansville, Ind., aged 18 years, and graduated in the Civil Engineering Course in 1891. From 1892 to 1905 was with the Metropolitan West Side Ele-

vated Railway Company as Assistant Engineer, Chief Engineer, and General Superintendent. From 1905 to date, Chief Engineer, General Superintendent, and Assistant General Manager of the Brooklyn Rapid Transit Company, Brooklyn, N. Y. Is a member of the A. S. C. E. For eighteen years he has given his attention to rapid transit problems in large cities, and has achieved distinction.

76. MEWHINNEY, OMAR. 1891.

Entered the Institute in 1887 from Terre Haute at the age of 16, and graduated in the Mechanical Engineering Course in 1891. After graduation was made Vice-President of the A. B. Mewhinney Company, which position he has held to date. He was married in Nebraska City, Neb., in 1900. His special work has been the designing of candy machinery, and in improving and building up of the candy manufacturing business established by his father in 1874.

77. PAIGE, WILLIAM ROBERT. 1891.

Entered the Institute from Terre Haute, Ind., in 1887, at the age of 18, and graduated in the Mechanical Engineering Course in 1891. In 1892 was Assistant City Engineer of Terre Haute. In 1893 with J. Pitzman's Company of Surveyors and Civil Engineers, St. Louis, Mo. In 1895 Assistant City Engineer, Terre Haute. From 1899 to 1901 Civil Engineer, Terre Haute. In 1901 Surveyor of Vigo County, Ind. From 1904 to date, Civil Engineer and Surveyor, Terre Haute.

78. WALES, SAMUEL SIGOURNEY. 1891.

Entered the Institute from Terre Haute, Ind., in 1887, at the age of 16, and graduated in the Mechanical Engineering Course in 1891. In 1891 and 1892 took a post-graduate course at the Institute, and for three months in 1892 was a student with the Thomson-Houston Electric Company. In 1892 was in the testing laboratory of the Westinghouse Electric Company, Pittsburgh. In 1893 with the Homestead Steel Works as Motor Inspector. In 1894 Superintendent Electrical Department of the Ohio Steel Works, Youngstown, O. In 1899 Superintendent of the Electrical Department, Homestead Steel Works, and from 1905 to date Superintendent of Armor Plate Department. Was granted degree of M.S. in 1902 and of E.E. in 1905, both from Rose. Is a member of the A. I. E. E. Mr. Wales has devel-

oped a special alloy steel, for use in protective deck plate for battleships, with a ballistic value 100 per cent. above nickel steel. Married. Commencement speaker in 1902.

79. BIXBY, ALLAN SMITH. 1892.

Entered the Institute from Grand View, Ill., in 1888, at the age of 18, and graduated in the Mechanical Engineering Course in 1892. In 17892 and 1893 was Draftsman for the Ewart Manufacturing Company, Indianapolis, Ind. In 1894 Foreman in the Mechanical and Pattern Department. In 1895 Superintendent of the Metallic Manufacturing Company. One year designing small tools and appliances, Ben Hur Cycle Company. In 1902 Superintendent of the National Malleable Castings Company, Indianapolis, which position he occupies to date. Mr. Bixby is a member of the A. S. M. E. and the A. S. for T. M.

80. BOYLES, THOMAS DICKINSON. 1892.

Entered the Institute from Riverside, Ill., in 1888, at the age of 18, graduating in the Mechanical Engineering Course in 1892. In 1892 with the Thomson-Houston Electric Company, Lynn, Mass. From 1895 to 1897 with the General Electric Company, Schenectady, N. Y. From 1897 to 1899 in Railway Engineering Department of the General Electric Company. In 1899 in the Switchboard Engineering Department, and in 1900 was Assistant Engineer for the company. Mr. Boyles was married in 1901, and died November 30, 1901, in Schenectady, after a brief but painful illness, in the midst of a promising career.

81. DAVIS, WILLIAM J., JR. 1892.

Entered the Institute from Louisville, Ky., in 1888, at the age of 20, and graduated in the Mechanical Engineering Course in 1892. In 1892 with the Thomson-Houston Electric Company, Lynn, Mass. In 1894 was a member of the firm of Davis & Cox, Electrical and Mechanical Engineers and Contractors, Louisville, Ky. From 1895 to 1899 in the Engineering Department of the General Electric Company, Schenectady, N. Y. From 1899 to 1908 Electrical Engineer in Railway Engineering Department, General Electric Company. In July, 1908, was made Engineer Pacific Coast District, General Electric Company, San Francisco, Cal. Mr. Davis was granted degree of M.S. in 1895 from Rose. Was President of Alumni Association in 1893 and Secretary-Treasurer in 1892.

82. DIETRICH, ARTHUR MAXIMILIAN. 1892.

Entered the Institute from Kansas City, Mo., in 1888, at the age of 17, and graduated in the Mechanical Engineering Course in 1892. From July, 1892, to September, 1893, Erecting Engineer American Linseed Company, Kansas City, Mo. From September, 1893, to September, 1894, Superintendent Dillon Cement Plaster Works, Kansas City. From September, 1894, to May 1, 1901, Assistant Superintendent American Linseed Company. From May, 1901, to September, 1905, Secretary and Manager American Fly Paper Company, and from September, 1905, to date Superintendent Baker Castor Oil Company, Jersey City, N. J. Mr. Dietrich was married April 25, 1894.

83. EHRSAM, WILLIAM JOHN. 1892.

Entered the Institute from Enterprise, Kan., in 1888, at the age of 17, and graduated in the Mechanical Engineering Course in 1892. From 1893 to 1897 was in charge of the Drafting Department of the J. B. Ehram Machine Company, Enterprise, Kan. From 1897 to 1901 of the firm of J. B. Ehram & Sons Machine Company. From 1903 to date Secretary and Treasurer of the same.

84. FOGARTY, WILLIAM JAMES. 1892.

Entered the Institute from Dayton, Ohio, in 1888, at the age of 19; graduated in the Mechanical Engineering Course in 1892. From 1893 to 1896 was Draftsman and Foreman with the Connersville Blower Company, Connersville, Ind. From 1897 to 1899 Superintendent Cambridge City Punch, Shear and Roll Company. From 1899 to 1905 Superintendent and Vice-President and Manager Magnetite Foundry Company, St. Louis, Mo. From 1905 to the present time Foreman Foundry Department, Barney & Smith Car Company, Dayton, Ohio. Was granted degree of M.S. in 1897 from Rose. Mr. Fogarty was married in 1902.

85. FOLSOM, EDSON FESSENDEN. 1892.

Entered the Institute from Indianapolis, Ind., in 1888, at the age of 18, and graduated in the Mechanical Engineering Course in 1892. In 1893 was graduate student at Cornell University and Inspector Mechanical Department World's Columbian Fair. From 1895 to 1897 was in the lumber and mill business in Indianapolis. From 1897 to 1903 with Brown-Ketcham Iron

Works, Indianapolis. On the death of his father he took up his business. From 1904 to 1908 Special Agent for Massachusetts Mutual Life Insurance Company. From 1908 to date General Agent for the Massachusetts Mutual Life Insurance Company, Indianapolis, Ind. Mr. Folsom was granted degree of M.M.E. in 1893 from Cornell University. Was married in Indianapolis June 20, 1900. Mr. Folsom has given much time to the furthering of the Institute's interests, representing the Alumni as Commencement orator in 1904.

86. FRANK, SIGMUND S. 1892.

Entered the Institute from Terre Haute, Ind., in 1887, at the age of 18, and graduated in the Mechanical Engineering Course in 1892. In 1893 was in the Electrical Engineering Department World's Columbian Exposition, Chicago. In 1894 with Geo. E. Lloyd & Co., Manufacturers of Machinery, Chicago. In 1895 Electric Light Inspector Chicago Fire Department. From 1896 to 1898 with the Edison Illuminating Company, St. Louis, Mo. From 1898 to 1901 with the Western Electric Company, Chicago. 1901 Manager H. Krantz Manufacturing Company, Brooklyn. 1902 with Geo. A. Fuller Company, New York. 1903 Engineer Mechanical Department Geo. A. Fuller Company. From 1905 to 1906 with Stanley Electric Manufacturing Company, Pittsfield, Mass. From 1907 to the present time with L. K. Comstock & Co., Contracting Engineers, New York City.

87. HUSSEY, WARREN. 1892.

Entered the Institute from Terre Haute, Ind., in 1888, at the age of 16, and graduated in the Mechanical Engineering Course in 1892. In 1893 with the Sand and Mortar Company, Waukegan, Ill. In 1894 of the firm of Condit & Hussey, Chicago, Ill. From 1896 to 1901 in the National State Bank, Terre Haute. From 1904 Cashier of the Terre Haute National Bank, until in 1908 he was compelled to take a leave of absence on account of health. Mr. Hussey was married in Terre Haute, Ind.

88. LAUX, ERNST CARL. 1892.

Entered the Institute from Los Angeles, Cal., in 1888, at the age of 16, and graduated in the Mechanical Engineering Course in 1892. From 1893 to 1895 was with the Westinghouse Electric Company, Pittsburg, Pa. No report has been received at the Institute from Mr. Laux since 1895.

89. LAYMAN, WALDO ARNOLD. 1892.

Entered the Institute from Terre Haute in 1888, at the age of 18, and graduated in the Mechanical Engineering Course in 1892. Entered the service of Wagner Electric Manufacturing Company in September, 1892, and served as Draftsman and Assistant in Testing Department for two years, Assistant Superintendent four years, Assistant General Manager two years, Assistant General Manager and Treasurer two years, General Manager five years, and First Vice-President and General Manager to date. Mr. Layman was granted degree of M.S. in 1894 and degree of E.E. in 1899, both from Rose. Is a member of the A.I.E.E. and associate member of the B.I.E.E.. Also is a member of several other St. Louis clubs. Was married June 8, 1896, at Richmond, Ind. He served on the Board of Managers from 1901 to 1904, and was Commencement speaker in 1892. He was one of the founders of the ROSE TECHNIC, established in 1891, and is always active in Institute life.

90. OGLESBY, MILTON LANDIS. 1892.

Entered the Institute from Salt Lake City, Utah, in 1888, at the age of 17, and graduated in the Mechanical Engineering Course in 1892. From 1893 to 1895 was in the service of R. H. Officer & Co., Assayers, Salt Lake City. In 1895 was with the Salt Lake and Ogden Gas and Electric Light Company, Salt Lake City. From 1896 to 1898 Superintendent Emerald Mining Company, Mammoth, Utah. From 1898 to 1901 Superintendent Emerald and Annandale Mining Companies, Robinson, Utah. From 1906 to date Mechanical and Mining Engineer of Oglesby & Oglesby, Salt Lake City, Utah. Mr. Oglesby was granted degree of M.S. in 1895 from Rose.

91. OTT, CLAUDE. 1892.

Entered the Institute from Rockville, Ind., in 1888, at the age of 18, and graduated in the Mechanical Engineering Course in 1892. From 1893 to 1895 in Expert Department General Electric Company, Schenectady, N. Y. From 1895 to 1898 County Surveyor, Rockville, Ind. From 1898 to 1900 Assistant Engineer on Construction of the Chihuahua & Pacific Railroad. In 1900 Resident Engineer and Division Engineer on Construction of El Paso & Southwestern Railroad. In 1903 Locating Engineer for St. Louis & San Francisco Railway Company on various lines in Arkansas and Louisiana. In 1906 Assistant Chief Engi-

neer on Construction of Indianapolis & Cincinnati Traction Company, Rushville, Ind. Afterward Chief Engineer of Construction of the Salsich Branch of Tacoma Eastern Railroad. Was married in Rockville, Ind., in 1903.

92. PUTNAM, BENJAMIN RISLEY. 1892.

Entered the Institute from Davenport, Iowa, in 1889, at the age of 18, and graduated in the Mechanical Engineering Course in 1892. In 1893 was a graduate student in mining at Columbia College, New York. From 1894 to 1897 Chemist with the Illinois Steel Company, South Chicago. In 1897 Chemist Columbia Land and Improvement Company, Victoria, B. C. In 1898 Chemist Montana Ore Purchasing Company, Butte, Mont. From 1900 to 1906 Head Assayer for Montana Ore Purchasing Company. In 1906 Smelter Superintendent for Bingham Consolidated M. & S. Co., West Jordan, Utah. From 1907 to date Metallurgical Chemist of Dozier & Putnam Company, Chemists and Engineers, Redding, Cal. Mr. Putnam was granted degree of M.A. in 1893 from Columbia College. Was married in June, 1907.

93. ROCK, SAMUEL MOOREHEAD. 1892.

Entered the Institute from Latrobe, Pa., in 1888, at the age of 19; graduated from the Mechanical Engineering Course in 1892. In 1892 Assistant to Master Mechanic Homestead Steel Works, Munhall, Pa. From 1893 to 1896 Draftsman with the Carnegie Steel Company, Homestead, Pa. In 1896 Engineer United States Revenue Cutter Service on Pacific Coast. 1900, Assistant Engineer United States Revenue Cutter Service, which position he holds to date. His most important work has been the inspection and installation of steam machinery in vessels of Revenue Cutter Service. Was an officer in the United States Navy during the Spanish-American War, and has traveled extensively, having made several trips to Alaska and one extending into the Arctic Ocean. Mr. Rock was married June 24, 1896, in Homestead, Pa.

94. ROSE, LUTHER S. 1892.

Entered the Institute from Springfield, Ohio, in 1889, at the age of 20, and graduated in the Civil Engineering Course in 1892. After graduation he was Rodman and Assistant Engineer for the C. C. C. & St. L. Railroad until the fall of 1895. Was Road-

master of the Central Vermont Railroad from 1895 to the spring of 1896. From 1896 to 1897 was Assistant Engineer of the C. C. C. & St. L. Railroad. In 1897 was Supervisor of Track until September, 1899, and from that time to June, 1907, was Engineer Maintenance of Way C. C. C. & St. L. Railroad Company at Mattoon, Ill. From June, 1907, to date has been Signal Engineer C. C. C. & St. L. Railroad, Cincinnati, Ohio. Is a member of the American Railway Engineers' and Maintenance of Way Association. Mr. Rose was married in Springfield, Ohio. He was in the Sandford powder explosion at Sandford, Ind., two years ago, but, though seriously injured, is now as hale and hearty as ever.

95. SPERRY, HERBERT BELL. 1892.

Entered the Institute from Malone, N. Y., in 1888, at the age of 21; graduated in the Mechanical Engineering Course in 1892. After graduation he accepted a position with the Walter A. Wood Harvester Company, of Minneapolis, Minn. From 1895 to 1898 Draftsman for the St. Albans Foundry and Machine Company, of St. Albans, Vt. From 1898 to 1907 with the International Harvester Company as Designer, Chief Draftsman and Superintendent of Experiments. From 1907 to the present with the Dain Manufacturing Company, of Ottumwa, Iowa. While with the International Harvester Company Mr. Sperry obtained a number of patents for improvements in machinery built by them, and was awarded a medal and diploma by the jury of awards of the St. Louis Exposition for work in collaboration with the International Harvester Company. Mr. Sperry was married in Terre Haute, Ind.

96. TINSLEY, SAMUEL B. 1892.

Entered the Institute from Louisville, Ky., in 1888, at the age of 21, and graduated in the Civil Engineering Course in 1892. In 1893 was a graduate student and Instructor in Civil Engineering at Rose Polytechnic Institute and later was with the United States Coast and Geodetic Survey on Alaskan boundary. From 1895 to the present time Professor of Mathematics in Male High School, Louisville, Ky. Is a member of the Engineers' and Architects' Club of Louisville. While connected with the Government on the Alaskan Boundary Survey Mr. Tinsley had charge of one triangulation party. Was married June 30, 1896, in Louisville, Ky.

97. TIPPY, BRUCE OREN. 1892.

Entered the Institute from New Carlisle, Ind., in 1888, at the age of 21, and graduated from the Mechanical Engineering Course in 1892. From 1892 to 1898 Engineer Grand Rapids Gas Works, Grand Rapids, Mich. In 1898 Engineer Detroit City Gas Company, Detroit, Mich. From 1903 to 1904 Superintendent of Manufacture, Detroit. From 1907 to the present time Vice-President and General Manager Grand Rapids Gas Lighting Company, Grand Rapids, Mich., and Consulting Gas Engineer.

98. WETHERBEE, HARRY LUTHER. 1892.

Entered the Institute from Marshalltown, Iowa, in 1888, at the age of 19; graduated in the Mechanical Engineering Course in 1892. In 1893 was Instructor in Wood Shop Santee Normal Training School, Santee Agency, Neb. From 1894 to 1901 farmer. In 1901 Draftsman Charter Gas Engine Company, Sterling, Ill., and the latter part of that year became Draftsman for the Fairbanks-Morse Company, Beloit, Wis. From 1903 to 1905 Draftsman Berlin Machine Works, Beloit. In 1906 with the Olds Gas Power Company, Lansing, Mich. From 1907 to date with the Illinois Steel Company, South Chicago, Ill. Mr. Wetherbee was married August 30, 1902.

99. WICKHAM, WALTER MORSE. 1892.

Entered the Institute from Huron, Ohio, in 1888, at the age of 16, and graduated in the Mechanical Engineering Course in 1892. In 1893 with the Kilby Manufacturing Company, Cleveland, Ohio. From 1894 to 1896 Draftsman for the Johnson Company, Lorain, Ohio. In 1897 Draftsman for the McCord Tube Company, Beaver Falls, Pa. In 1898 Draftsman Carnegie Steel Company, Pittsburg. In 1899 Draftsman in the Copper Mills of C. G. Hussey, Pittsburg. In 1900 Draftsman Lackawanna Iron and Steel Company, Scranton. In 1901 Chief Draftsman Lackawanna Iron and Steel Company, Buffalo. In 1902 and 1903 Engineer Blast Furnace Lackawanna Steel Company, Buffalo. From 1904 to 1906 Draftsman and Engineer Semet Solvay Company, Syracuse, N. Y. From 1906 to 1909 Chief Draftsman with the Indiana Steel Company, Gary, Ind., which position he resigned. His present address is 6215 Washington Avenue, Chicago. Mr. Wickham has written several articles for engineering magazines.

100. WICKS, ALBERT WOOD. 1892.

Entered the Institute from Arcola, Ill., in 1888, at the age of 17; graduated from the Mechanical Engineering Course in 1892. In 1893 was in the Mechanical Department World's Columbian Exposition, Chicago. From 1894 to 1899 with Hyde Park Electric Company, Chicago. From 1899 to 1901 in Southern District Offices Commonwealth Electric Company, Chicago. In 1903 Contract Agent for Chicago Edison Company, Chicago. In 1904 Manager of Chicago office The Electric Machinery Company, Chicago. In 1907 General Manager Economy Light, Fuel and Power Company, Lockport, N. Y. From 1908 to date with Power and Mining Department General Electric Company, Chicago, Ill. Mr. Wicks was married November 7, 1901.

101. WILSON, ROBERT LEE. 1892.

Entered the Institute from Shelbyville, Ill., in 1888, at the age of 18, and graduated in the Mechanical Engineering Course in 1892. In 1893 in Expert Department General Electric Company, Schenectady, N. Y. In 1894 graduate student Johns Hopkins University. From 1895 to 1898 with the Westinghouse Electric Company, Pittsburg. From 1898 to 1901 Electric Engineer Westinghouse Electric and Manufacturing Company, Pittsburg. In 1902 Resident Engineer Westinghouse Electric and Manufacturing Company, New York. 1904, Superintendent of Construction Westinghouse Electric and Manufacturing Company, Pittsburg. From 1905 to the present is Superintendent of Railway Construction Westinghouse Electric Company. Mr. Wilson was married in 1901. He has had charge of the installation and erection of some of the largest plants, notably the plants of the Interborough Rapid Transit Company, New York City Railway, Brooklyn Rapid Transit Company. Also the electrification of the N. Y., N. H. & H. Railway and the St. Clair Tunnel.

102. WOOD, GEORGE ROY. 1892.

Born at Martin's Ferry, Ohio, July 29, 1872. Entered in 1888; graduated in Mechanical Engineering Course in 1892. Took graduate course in Civil Engineering at Rose in 1893. In 1894 with the Cleveland, Loraine & Wheeling Railroad Company, Martin's Ferry. From 1895 to 1899 with the General Electric Company in the Mining Department, successively as Assistant to Construction Foreman, Construction Foreman, and Sales Engineer. During this time, located at Pittsburg, represented

the Philadelphia office of the company. His work has been along the line of the application of electricity to mining work. Some of the largest plants in the country were installed by him. From 1899 to 1902 Superintendent of Electrical Equipment Pittsburg Coal Company, Pittsburg, Pa. From 1903 to date Consulting Electrical and Mining Engineer. Is a member of the A. I. E. E., A. I. M. E., The Franklin Institute, the N. G. S., associate member of A. S. C. E., also a member of the University Club of Pittsburg.

103. YOUNG, CHARLES JAMES. 1892.

Entered the Institute from Davenport, Iowa, in 1889, at the age of 19, and graduated in the Mechanical Engineering Course in 1892. In 1893 in the Drafting Department E. P. Allis Company, Milwaukee, Wis. In 1894 was a graduate student at Cornell University. From 1895 to 1898 Manager of the People's Lighting Company, Davenport. From 1898 to 1902 Manager of the People's Lighting Company, Davenport, and Superintendent People's Power Company's station, Moline, Ill. 1902 with the Woodward Governor Company, Rockford, Ill. 1903 Secretary and Treasurer of the Woodward Governor Company. From 1904 to 1906 General Superintendent of the Saginaw-Bay City Railway and Light Company, Saginaw, Mich. In 1907 Department Sales Manager Cooper, Hewitt Lamp Company, Chicago, and to date traveling Construction Engineer.

104. ALBERT, CLIFFORD EDMUND. 1893.

Born January 13, 1872, at Cincinnati, Ohio. Entered the Institute in 1889; graduated in the Electrical Engineering Course in 1893. From 1893 to 1896 with Branham, Gest & Co., General Contractors, Cincinnati. From 1896 to date with the United States Playing Card Company, also the United States Printing Company, from 1906 to date, as General Accountant. Mr. Albert was married in 1899 at Cincinnati, Ohio.

105. ALBERT, WALTER HENRY. 1893.

Born August 17, 1870, at Cincinnati, Ohio. Entered in 1889, and graduated in the Electrical Engineering Course in 1893. From 1894 to 1900 was Accountant. From 1900 to 1901 Secretary of the Barron-Boyle Company, Cincinnati, Ohio, and from 1902-4 Vice-President and Secretary. From 1905-6 Special Examiner the Adams Express Company. From 1907 to date Assistant Treasurer the Adams Express Company, Sec-

retary and Treasurer the Morris European and American Express Company, Treasurer Hollywood Hotel and Cottage Company, Treasurer Dodd & Childs' Express Company, New York City. Married December 31, 1901, at McKeesport, Pa.

106. ALLEN, BURGESS F. 1893.

Entered the Institute from Otter Creek Junction, Ind., in 1889, at the age of 21, and graduated in the Electrical Engineering Course in 1893. In 1894 was Artist and Designer, Indianapolis. In 1895 of Allen Bros., Monumental Architects and Designers, Indianapolis. From 1903 to 1905, B. F. Allen, Designer, Indianapolis, and in December, 1905, died in Indianapolis.

107. BECKER, MAURICE EMIL. 1893.

Entered the Institute from Connersville, Ind., in 1886, aged 18; graduated in the Electrical Engineering Course in 1893. From 1894 to 1905 Draftsman for the Connersville Blower Company, Connersville. 1905 and 1906 Draftsman for the Piqua Foundry and Machine Company, Piqua, Ohio. From 1907 to date Engineer Piqua Foundry and Machine Company, Piqua, Ohio.

108. DALE, JAMES. 1893.

Entered the Institute from Cincinnati, Ohio, in 1890, at the age of 24; graduated in the Electrical Engineering Course in 1893. In 1893 and 1894 selling and installing light and power plants, Cincinnati. In 1895 with the National Cash Register Company, Dayton, Ohio. In 1896 Salesman for the National Cash Register Company, Minneapolis, Minn. 1897 to 1898 in the bicycle business in Denver, Col. From 1899 to 1901 Salesman Hallwood Cash Register Company, Minneapolis, Minn. From 1902 to 1905 Sales Agent for the Hallwood Cash Register Company, Indianapolis, Ind. From 1906 to 1908 Office Manager National Cash Register Company, Cleveland. Is now Office Manager of the National Cash Register Company at Detroit, Mich. Mr. Dale was married in Minneapolis April 1, 1899.

109. HART, HARRY STILLSON. 1893.

Entered the Institute from Clinton, Iowa, in 1889, at the age of 19, and graduated in the Electrical Engineering Course in 1893. In 1894 was connected with the Siemens & Halske Electric Company, Chicago. From 1895 to 1897 with the Fostoria Carbon Company, Fostoria, Ohio. From 1897 to 1899 with the

Crouse-Tremaine Carbon Company. In 1899 with the Rodger Ballast Car Company. From 1900 to 1901 Secretary and Treasurer of the Rodger Ballast Car Company. In 1902 and 1903 Vice-President of the Rodger Ballast Car Company. In 1904 was made President of the Rodger Ballast Car Company, which position he still holds. Is also President of the National Dump Car Company, Chicago, Ill., and the Hart-Otis Car Company, Canada. Mr. Hart holds a number of patents on hopper steel car construction and on convertible types of cars.

110. HOOD, ARTHUR MERRILL. 1893.

Entered the Institute from Indianapolis, Ind., in 1889, at the age of 17, and graduated in the Electrical Engineering Course in 1893. From 1894 to 1896 Fourth Assistant Examiner United States Patent Office, Washington, D. C. From 1896 to 1898 junior member of H. P. Hood & Son, Patent Attorneys, Indianapolis, Ind. From 1898 to 1902 Patent Attorney, Indianapolis. From 1902 to the present time of the firm of Bradford & Hood, Patent and Trademark Attorneys, Indianapolis, Ind. Was given the degree of LL.B. from Columbian University in 1895, and the degree of M.S. from Rose in 1898. Is a member of the bar of the Supreme Court of the United States and the Supreme Court of Indiana. Was married April 16, 1895, in Washington, D. C. At the time Mr. Hood was examined for the Patent Office service he was the only one of seven candidates who passed. He has been Secretary-Treasurer of the Alumni Association from 1906 to date, and also represents the Alumni on the Board of Managers.

111. HUTHSTEINER, ROBERT EDWARD. 1893.

Entered the Institute from Tell City, Ind., in 1889, at the age of 17, and graduated in the Electrical Engineering Course in 1893. In 1894 was Private Assistant to Professor Gray at the Rose Polytechnic Institute. From 1895 to 1897 Engineer in the Ice Factory, Tell City, Ind. From 1898 Erecting Engineer Frick Company, Waynesboro, Pa. From 1898 to 1903 with the General Electric Company in the Switchboard Department, Schenectady, N. Y. In 1903 Assistant Manager Switchboard Department General Electric Company. From 1908 to date Manager of the El Paso Ice and Refrigerator Company, El Paso, Tex. Is a member of the A. I. E. E. and Society of Engineers of Eastern New York. Was married September 19, 1894.

112. JOHANNESSEN, SVEND EMANUEL. 1893.

Entered from Erie, Pa., in 1889, age 23; graduated in the Civil Engineering Course in 1893. From 1893 to 1895 was Engineer in the Testing Department and from 1895 to 1902 Engineer in charge of Transformer Department Wagner Electric Manufacturing Company, St. Louis, Mo. From 1902 to 1906 Section Engineer in charge of Air Blast and Railway Transformer Department Westinghouse Electric and Manufacturing Company, Pittsburg. From 1906 to the present time Engineer in charge of Commercial Transformer Department General Electric Company, Pittsfield, Mass. Was granted degree of M.S. in 1895 and E.E. in 1898 from Rose. Is a member of the A. I. E. E. Has written several articles for technical publications. Was married in Terre Haute June 5, 1895. Was one of the organizers of the first Rose Orchestra.

113. JOHONNOTT, EDWIN SHELDON, JR. 1893.

Born Richmond, Ill., November 9, 1869. Entered the Institute in 1887; in 1889 withdrew because of defective eyesight; re-entered in 1891; graduated in the Electrical Engineering Course in 1893. Was Assistant Examiner in the Patent Office in 1893. In 1894 Professor of Mathematics Drury College. In 1895 graduate student Johns Hopkins University. 1896 graduate student Chicago University, and in 1897-99 Fellow in Physics University of Chicago. From 1899 to date Associate Professor of Physics Rose Polytechnic Institute. Was granted degree of M.S. in 1897 from Rose, and Ph.D. from Chicago in 1898. Member of American Physical Society and A. A. A. S. Published articles are "Thin Liquid Films," in *Philosophical Magazine*, June, 1899, and June, 1904, and "Alternating Currents," in *Physical Review and Electrical World and Engineer*, 1904. Was married August 22, 1900. Commencement speaker, 1899.

114. KLOTZ, AUGUST HENRY. 1893.

Entered the Institute from Sandusky, Ohio, in 1889, at the age of 21, and graduated in the Electrical Engineering Course in 1893. From 1894 to 1900 with the George Feick Company, Architects and Builders, Sandusky, Ohio. From 1900 to 1903 Managing Owner of the Klotz & Kromer Machine Company, Sandusky, Ohio. From 1904 to date Proprietor of the Klotz Machine Company, Sandusky, Ohio. Mr. Klotz was married February 6, 1908.

115. McDERMOTT, HARRY E. 1893.

Entered the Institute from Stockport, Ohio, in 1889, at the age of 19, and graduated in Electrical Engineering in 1893. From 1895 to the present time has been connected with the General Electric Company, Schenectady, N. Y., as Engineer and in charge of the Calculating Department.

116. MCGREGOR, JAMES CHARLES, JR. 1893.

Entered the Institute from Terre Haute in 1889, at the age of 17; graduated in the Electrical Engineering Course in 1893. In 1894 with the Westinghouse Electric Company, Pittsburg. In 1896 in office of Corporation Counsel, New York City. In 1897 Assistant Corporation Counsel, New York City. In 1898 junior member of the law firm of Large & McGregor, New York City. From 1901 to 1903 in the United States Army. In 1904 mining in Cananea, Sonora, Mexico. Received degree of LL.B. from Columbia University. Since 1904 no report has been received at the Institute from Mr. McGregor.

117. MOTH, ROBERT HENRY. 1893.

Entered the Institute from Kenosha, Wis., in 1889, at the age of 17, and graduated in the Civil Engineering Course in 1893. From 1898 to 1901 Civil Engineer with the Davy Burnt Clay Ballast Company, Kenosha, Wis. From 1901 to date City Engineer and Superintendent of Water Works, Kenosha, Wis.

118. RICE, ARTHUR. 1893.

Entered the Junior Class from Indianapolis in 1891, at the age of 20, and graduated in the Electrical Engineering Course in 1893. In 1896 with the Metropolitan Telegraph and Telephone Company, New York. From 1897 to 1906 Engineer in Construction Department New York Telephone and Telegraph Company. From 1907 Interior Block Engineer New York Metropolitan Telephone and Telegraph Company, New York City. Some of Mr. Rice's more important work has been the installation of the Interior Block System of Telephone Distribution in New York City and the consequent removal of overhead wires. Is a member of the A. I. E. E., New York Electrical Society, and the New York Telephone Society. Was married in New York City September 15, 1906.

119. ROSE, CLARENCE CHARLES. 1893.

Entered the Institute from Little Rock, Ark., in 1889, age 17; graduated in the Electrical Engineering Course in 1893. From 1893 to 1894 with the General Electric Company, Chicago. From 1894 to 1901 Secretary and Treasurer of the Camden Power and Light Company, and President of the Camden Machinery and Supply Company, Camden, Ark. From 1901 to 1902 Vice-President of the W. W. Dickinson Hardware Company, Little Rock, Ark. From 1902 to date President of Rose-Lyon Hardware Company, Little Rock, Ark. Mr. Rose was married in Little Rock in 1898.

120. ROSS, TAYLOR WILLIAM. 1893.

Entered the Institute in 1888 from Madison, Ind., age of 16; graduated in the Electrical Engineering Course in 1893. In 1893 with Thos. Graham & Co., Manufacturers of Wood Materials, Madison. In 1894 graduate student Cornell University. In 1895 Second Assistant Engineer United States Revenue Cutter Survey, Treasury Department, Washington, D. C. From 1898 to 1901 Second Assistant Engineer United States Revenue Cutter Survey, Seattle, Wash. In 1901 with the New York Ship Building Company, Camden, N. J. From 1903 to the present time with the Newport News Ship Building and Dry Dock Company, Newport News, Va. Mr. Ross was granted degree of M.E. from Cornell University in 1894.

121. VALENTINE, ROBERT DAVID. 1893.

Entered the Sophomore Class from Cannon Falls, Minn., in 1890, at the age of 26; graduated in the Electrical Engineering Course in 1893. From 1894 to 1896 with the Westinghouse Electric Company, Pittsburg. In 1896 with the Cannon Falls Electric Company. From 1906 to 1908 installed several electric plants operated by gasoline engines. In 1898 with the Electric Machine Company, Minneapolis. From 1900 to 1903 of the firm of Valentine Bros., Machinists and Electricians, Minneapolis. From 1904 to date Secretary and Shop Superintendent of Valentine Bros. Manufacturing Company, Minneapolis, Minn.

122. WAITE, WILLIAM HENRY. 1893.

Entered the Institute from Toledo, Ohio, in 1889, age 18; graduated in the Electrical Engineering Course in 1893. In 1894 Draftsman with the Vulcan Iron Works, Toledo, Ohio. From

1895 to 1898 Engineer Bucyrus Company, Steam Shovel and Dredge Department, South Milwaukee. From 1898 to 1905 Chief Engineer with the Vulcan Iron Works, Toledo. In 1905 Chief Engineer National Drill and Manufacturing Company, Barberton, Ohio. In 1906 Manager Steam Shovel Department Browning Engineering Company, Cleveland, Ohio, and in 1907 became Sales Manager of the Browning Engineering Company, which position he holds to date. Mr. Waite was married in Terre Haute, Ind., in 1898.

123. WENZEL, CHARLES GOTLOB. 1893.

Born October 25, 1870, Cincinnati, Ohio. Entered the Institute from Toledo, Ohio, in 1890; graduated in the Electrical Engineering Course in 1893. From September, 1893, to 1907 Instructor Toledo Manual Training School. From 1906 to 1908 Superintendent Shaw-Kendall Engineering Company and Toledo Machine and Tool Company. At present in manual training work at Central High School, Toledo, Ohio. Mr. Wenzel was married in Toledo in 1895.

124. ANDERSON, WARWICK MILLER. 1894.

Entered the Institute from Louisville, Ky., in 1890, at the age of 18; graduated in the Electrical Engineering Course in 1894. From 1894 to 1896 Draftsman with the L. & N. Railroad Company, Louisville, Ky. In 1896 and 1897 Instructor in English Louisville Male High School. Graduate student in Mathematics and Physics University of Chicago during the summers of 1896 to 1900, inclusive. From 1897 to 1902 Instructor in Physics Manual Training High School, Louisville. In 1902 and 1903 graduate student in Mathematics and Physics Johns Hopkins University. From 1903 to the present time Instructor in Mathematics at the Patterson-Davenport School, Louisville, Ky. Mr. Anderson was married in 1898 in Louisville. He represented the Alumni as orator at the Commencement, 1907.

125. ANDREWS, MORTON CLARK. 1894.

Entered the Institute from State Line, Ind., in 1890, at the age of 21, and graduated in the Civil Engineering Course in 1894. In 1895 was Instructor in Civil Engineering Rose Polytechnic Institute. From 1896 to 1899 Superintendent of Construction Williamsport Stone Company, Williamsport, Ind. From 1899 to 1903 Civil Engineer and Superintendent of Construction

Williamsport Stone Company, Williamsport, Ind. 1906 Civil Engineer of firm of W. P. Carmichael Company, Engineers and Contractors, Williamsport, Ind. At the present time is junior partner of W. P. Carmichael Company.

126. BLINKS, WALTER MOULTON. 1894.

Entered from Michigan City, Ind., in 1890; graduated from the Chemistry Course in 1894. In 1894 was with the Michigan City Gas Company; from 1895-98 Manager of the Isabella Gas Works, Frederick, Md. From 1908 to 1903 Superintendent Michigan City Gas Light Company. From 1903 to present time Assistant Manager General Gas Light Company, Kalamazoo, Mich. Was also Secretary and Treasurer Michigan Enameling Works, Kalamazoo. Was married in 1898.

127. BROWN, ELMER. 1894.

Entered the Institute from Terre Haute in 1889, at the age of 16; graduated in Chemistry in 1894. In 1895 was with the County Surveyor, Terre Haute. In 1906 with the Ohio Steel Company, Youngstown, Ohio. In 1897 was in Indianapolis. In 1898 with the Maryland Steel Company, Sparrows Point, Md. Mr. Brown died in 1899.

128. DENEHIE, JOHN FRANKLIN. 1894.

Entered the Institute from Terre Haute in 1890, age 19; graduated in the Electrical Engineering Course in 1894. From 1895 to 1903 in Testing Department Louisville Electric Light and Gas Company, Louisville, Ky. From 1908 to date has had the additional charge of all repairs with the same company. Is a member of the Louisville Engineers' and Architects' Club. Was married June 26, 1902.

129. FROHMAN, EDWARD D. 1894.

Born August 12, 1873, Erlangen, Germany. Entered the Institute from Cincinnati, Ohio, in 1890; graduated in Chemistry in 1894. In 1894 and 1895 was a graduate student in Chemical Engineering at the Massachusetts Institute of Technology, Boston. In 1896 in the Chemical Department Pittsburg Testing Laboratory, Pittsburg. From 1897 to 1900 of the firm of O. Hommel & Co., Pittsburg. From 1900 to 1901 Manager of the Paint Department S. Obermayer Company, Cincinnati, O. From 1902 to the present time Secretary and Treasurer of the

S. Obermayer Company at Pittsburg, Pa. Mr. Frohman is a member of the Engineers' Society of Western Pennsylvania and Pittsburg Foundrymen's Associations. His work in the last few years has been in the use of coal as purifier in glass manufacturing and the perfection of core compounds in foundry practice.

130. HEDDEN, ORAN ROBERTS. 1894.

Entered the Institute from Robinson, Ill., in 1890, age 19; graduated in the Electrical Engineering Course in 1894. In 1895 was with the Chicago Telephone Company. From 1895 to 1902 Principal High School, Robinson, Ill. From 1903 to 1904 Superintendent of Schools, Newman, Ill. From 1907 to date City Engineer of Robinson, Ill.

131. HENRIKSON SIGURD LUND. 1894.

Entered the Institute from Chicago, Ill., in 1890, at the age of 17, and graduated in the Electrical Engineering Course in 1894. From 1894 to 1895 with the Bostedo Packing and Cash Carrier Company, Chicago. In 1895 with Siemens & Halske Electric Company, Chicago. In 1896 with the Illinois Steel Company, Chicago. From 1897 to 1901 Draftsman Union Iron Works, San Francisco, Cal. October 18, 1902, Mr. Henrikson died at Pasadena, Cal.

132. HILDRETH, FRED FOSTER. 1894.

Entered the Institute from Bridge Hampton, L. I., in 1890, age 24; graduated in the Civil Engineering Course in 1894. In 1894 connected with the L. I. Railroad Company as instrument man, Bridge Hampton, L. I. From 1895 to 1898 Assistant Engineer T. H. & I. Railroad Company, Terre Haute, Ind. From 1898 to 1900 Assistant Engineer of Motive Power T. H. & I. Railroad Company. From 1900 to 1903 Acting Master Mechanic T. H. & I. Railroad Company. In 1903 Master Mechanic T. H. & I. Railroad Company. From 1904 to the present time Mechanical Engineer Vandalia Railroad Company, Terre Haute, Ind. Married. Mr. Hildreth has been connected with the Vandalia Railroad for fifteen years throughout its period of development from an isolated road to one of the most important branches of the Pennsylvania System. He has served as Alumni representative on the Board of Managers from 1902-1904, and has held office in the Association.

133. HOLDING, JAMES CLARK CARLISLE. 1894.

Entered the Institute from Terre Haute, Ind., in 1890, age 17; graduated in the Civil Engineering Course in 1894. In 1895 in the Engineering Department Johnson & Co., Lorain, Ohio. From 1896 to 1898 with the Shiffler Bridge Company, Pittsburg. From 1898 to 1904 with the Keystone Bridge Works, Carnegie Steel Company, Pittsburg. From 1904 to the present time with Sales Bureau Carnegie Company, Pittsburg, Pa.

134. KILBOURNE, HUBERT GORHAM. 1894.

Born October 12, 1872, Terre Haute. Entered the Institute in 1890; graduated in Chemistry in 1894. From 1894 to 1896 Contracting, Heating, and Ventilating Engineer Kilbourne & Kilbourne, Terre Haute. From 1896 to 1897 Manager Shafer Acetylene Generator Company, Terre Haute. From 1897 to 1898 Superintendent Heating Department John Watson's Sons Company, Terre Haute. From 1899 to 1903 Superintendent Liquid Carbonic Gas Company Soda Fountain Department, Chicago. From 1903 to 1905 Sales Department American Soda Fountain Company, New York. From 1905 to 1907 Manager L. A. Becker Company, New York. In 1908 Manager Franklin Automobile Company, Boston. In 1909 of the firm of Kilbourne-Corlew Motor Company, Boston, Mass. Mr. Kilbourne is a member of the Drug and Chemical Club, New York City.

135. McCULLOCH, DAVID. 1894.

Entered the Institute from Indianapolis, Ind., in 1890, age 18; graduated in the Electrical Engineering Course in 1894. In 1895 and 1896 was in the Engineering Department of the Deering Hardware Company, Chicago. In 1896 a medical student at Rush College, Chicago. March 13, 1898, died in Indianapolis, Ind.

136. MENDENHALL, CHARLES ELWOOD. 1894.

Born August 1, 1872, Columbus, Ohio. Entered the Institute from Washington, D. C., in 1890; graduated in the Electrical Engineering Course in 1894. From 1894 to 1895 Assistant Instructor in Physics at University of Pennsylvania, Philadelphia. From 1895 to 1897 graduate student at Johns Hopkins University. From 1897 to 1898 Fellow in Physics Johns Hopkins University. From 1898 to 1901 Instructor in Physics Williams College, Williamstown, Mass. From 1901 to 1905 Assistant

Professor in Physics, and from 1905 to the present time Professor of Physics University of Wisconsin. Was granted degree of Ph.D. in 1898 from Johns Hopkins University. Is a member of A. A. A. S. and of the American Physical Society. He has written various papers on Experimental Physics, chiefly along the line of gravity and radiation. Was married at Talcottville, N. Y., February 14, 1906. Mr. Mendenhall represented the Alumni as Commencement orator in 1903.

137. MISCHLER, PAUL. 1894.

Entered the Institute from Terre Haute in 1889, age 16; graduated in the Electrical Engineering Course in 1894. Immediately after graduation went to Denver, Col., on account of his health, and died there November 8, 1895.

138. MORY, AUSTIN VAN HOESEN. 1894.

Entered the Institute from Manchester, Iowa, in 1891, age 21; graduated in Chemistry in 1894. In 1895 assisted building gas plant, Waltham, Mass. From 1896 to 1899 Chemist in Laboratory of Armour & Co., Chicago. From 1899 to 1901 Superintendent Analytical Laboratory Armour & Co., Chicago. From 1902 to 1906 Chemist for Armour Packing Company, Kansas City, Mo. In 1907 Chemist with Food Laboratory, Bureau of Chemistry, Washington, D. C. From 1908 to date Acting Chief United States Food and Drug Inspection Laboratory, Kansas City, Mo. Is married.

139. RIEDEL, EDWARD. 1894.

Entered the Institute from Cloverport, Ky., in 1890, age 20; graduated in the Electrical Engineering Course in 1894. From 1895 to 1899 was Assistant Electrician for the Louisville Street Railway Company, Louisville. From 1900 to 1901 with the Metropolitan Street Railway Company, New York City. From 1902 to 1904 with the Westinghouse Electric Company, Pittsburgh. From 1904 to 1905 with the Westinghouse Electric Company, St. Louis. From 1906 to date District Engineer Westinghouse Electric Company, St. Louis, Mo.

140. ROBINSON, EDGAR FRANKLIN. 1894.

Entered the Institute from Earlington, Ky., in 1890, age 16; graduated in the Civil Engineering Course in 1894. In 1895 Mining Engineer for the Consolidated Coal Companies of East-

ern Tennessee, Newcomb, Tenn. From 1896 to 1899 in the Maintenance of Way Department of the St. Louis Division Big Four Railway, Mattoon, Ill. 1899 Assistant Roadmaster N. Y. Central Railroad, Lyons, N. Y. In 1900 Roadmaster West End St. Paul & Sioux City Division, Worthington, Minn. From 1902 to 1903 Superintendent Maintenance of Way of Butte, Anaconda & Pacific Railway Company, Anaconda, Mont. 1904 Engineer of Track Buffalo, Rochester & Pittsburg Railway, Rochester, N. Y. From 1907 to date Chief Engineer Buffalo, Rochester & Pittsburg Railway, Rochester, N. Y.

141. ROYSE, JAMES SAMUEL. 1894.

Entered the Institute from Terre Haute, Ind., in 1890, age 17; graduated in the Electrical Engineering Course in 1894. In 1894 and 1895 was a graduate student at Rose Polytechnic Institute. In 1899 Draftsman in the City Engineer's office, Terre Haute. From 1900 to 1905 with the Terre Haute Trust Company, Terre Haute, and from 1905 to May, 1909, Vice-President and Secretary of the Terre Haute Trust Company, since which time he has been President, succeeding Mr. I. H. C. Royse, deceased. In 1900 Mr. Royse was married at Milford, Ill. Elected to Board of Managers in 1908.

142. SPEED, JAMES BUCKNER. 1894.

Entered the Institute from Louisville, Ky., in 1890, age 18; graduated in the Electrical Engineering Course in 1894. From 1894 to 1896 Assistant Superintendent Louisville Electric Light Company. From 1896 to 1897 in Electrical Contracting, Louisville, Ky. From 1897 to 1898 with United States Engineering Department and in Spanish War. From 1898 to 1905 with the Southern Pacific Railroad Company in various capacities, San Francisco, Cal. From 1905 to 1909 Consulting Engineer, Berkeley, Cal. Was granted degree of M.S. in 1896 from Rose. Was married in 1900.

143. STANTON, HOWARD MAXWELL. 1894.

Entered the Institute from Indianapolis, Ind., in 1889, age 18; on account of sickness was obliged to withdraw for a year during his course; graduated in the Electrical Engineering Course in 1894. From 1895 to 1899 of the firm of Stanton & Denny, Attorneys, Indianapolis. From 1899 to date of the firm of Stanton & Stanton, Attorneys, Indianapolis, Ind. Was granted

degree of LL.B. from the Indianapolis Law School. December 28, 1897, Mr. Stanton was married in Chicago. Mr. Stanton has been kindly remembered by Rose people, who owe to his efforts the comfort of sidewalks from Eighth Street to the Institute.

144. WINTERS, GEORGE HAROLD. 1894.

Entered the Institute from Dawn, Ohio, in 1890, age 20; graduated in the Civil Engineering Course in 1894. December, 1894, to June, 1905, with the National Cash Register Company, Dayton, Ohio. From 1896 to 1898 Assistant Engineer Big Four Railway. From 1898 to 1900 Roadmaster Mexican National Railway Company at Saltillo, Mexico. From 1900 to 1902 Resident Engineer on the construction of the Coahuila & Pacific Railway. From 1902 to 1903 Resident Engineer Mexican National Railway. From January to April, 1903, with the Waters-Pierce Oil Company, Vera Cruz. From April, 1903, to January, 1904, Engineer in charge of the United Railways of Yucatan. From January to July, 1904, Engineer and Contractor, building twelve miles of railroad through swamps of State of Tobasco, Mexico. From July to October, 1904, returned to United Railways of Yucatan. From October, 1904, to June, 1906, Assistant Chief Engineer on reconstruction work on the Tehuantepec National Railway. From June, 1906, to December, 1907, Engineer in charge of construction for the Cuba Eastern Railway. From December, 1907, to June, 1908, Superintendent of Construction and Chief Engineer, finishing up twenty miles of macadam road in Cuba. From June, 1908, to the present time regaining his health after tropical sickness, doing light work in Civil Engineering at his old home, Greenville, O.

145. ANDERSON, LEWIS CLIFFORD. 1895.

Entered the Institute from Delaware, Ohio, in 1891, age 17; graduated in the Electrical Engineering Course in 1895. In 1896 was with the Crouse Tremaine Carbon Company, Fostoria, Ohio. From 1897 to 1903 of the firm of Weis & Anderson, Electrochemists, and with the American Writing Paper Company. From 1903 to the present time Secretary and Treasurer of the Franklin Electric Light Company, and Consulting Electrical Engineer, Franklin, Ohio. He was married June 7, 1905, at Franklin, Ohio. Mr. Anderson's work lies especially along the line of power plant designing and investigations on electrolysis.

146. BIGELOW, HENRY WAITE. 1895.

Born May 8, 1868, at Colchester, Conn. Entered the Institute in 1889; graduated in the Electrical Engineering Course in 1895. From July 1, 1895, to September 1, 1895, Engineer in Boot and Shoe Factory, Colchester. From 1895 to 1900 in Testing Department Pope Manufacturing Company, Hartford, Conn. In 1900 to 1906 with the Hartford Rubber Company, Hartford, Conn., in charge of the Experimental Department. In 1905 and 1906 Superintendent Rubber Works, Hartford, Conn. From 1907 to the present time Superintendent Insulated Wire and Cable Departments The Simplex Electrical Company, Cambridgeport, Mass. Mr. Bigelow was married October 11, 1905.

147. BROWN, SAMUEL GEORGE. 1895.

Born March 7, 1872, at Willoughby, Ohio, and entered the Institute in 1891; graduated in the Electrical Engineering Course in 1895. In 1895-6 was graduate student at Cornell University. 1896 Draftsman Terre Haute Manufacturing Company. From 1896 to 1899 fruit grower, Willoughby, Ohio. From 1899 to 1900 in the Engineering Department of the Printing Telegraph Company, Allegheny, Pa. From 1901 to the present time a fruit grower, Willoughby, Ohio.

148. BURTIS, EDWIN RANSOME. 1895.

Born August 18, 1870, in New York. Entered the Institute from Manhattan, Kan., in 1892; graduated in the Electrical Engineering Course in 1895. From 1895 to 1896 Draftsman for Automatic Coal Recorder Company, Denver, Col. From 1899 to 1901 with F. A. Walters, Fuel Contractor for Colorado & Southern Railway, Denver. In 1905 Superintendent Sugar Loaf Mine, Copley, Cal. Since 1905 no record has been received at the Institute.

149. CRAVER, HARRY WEIRAUCH. 1895.

Born August 10, 1875, Owaneco, Ill. Entered the Institute from Terre Haute in 1891; graduated in Chemistry in 1895. 1895 to 1896 graduate student in Chemistry at Rose. From 1896 to 1897 Chemist to Kirkpatrick & Co., Pittsburg, Pa. From 1897 to spring of 1899 Chemist to the Shoenberger Steel Company, of Pittsburg. Then Metallurgist to the Duquesne Reduction Company, of Pittsburg, till January, 1900. Then was with the Virginia Iron, Coal and Coke Company until April, 1900, when he

accepted a position with the Carnegie Library at Pittsburg. Remained until March, 1902, and then resigned to become Assistant Superintendent of the Allegheny Steel and Iron Company, of Pittsburg. In August of same year returned to the Carnegie Library, where he has since remained. Was Technology Librarian until September, 1908, when was appointed Librarian. Is a member of the A. A. A. S., A. L. A., the A. C. S., the Engineers' Society Western Pennsylvania, and the Keystone Library Association. Was married in 1902.

150. CROCKWELL, CHARLES ROLAND. 1895.

Born August 12, 1873, Council Bluffs, Iowa. Entered the Institute in 1891; graduated in the Civil Engineering Course in 1895. From 1895 to 1896 Engineer in War Department, River and Harbor Commission, Council Bluffs. From 1897 to 1900 junior member of the firm of J. D. Crockwell & Son, Council Bluffs. From 1901 to 1903 Chief Engineer Cambria Mining Company, Cambria, Wyo. From 1903 to 1907 Contracting Engineer for The Jeffrey Manufacturing Company, Columbus, Ohio. From 1907 to the present time Sales Manager Jeffrey Manufacturing Company, St. Louis, Mo. Mr. Crockwell was married in Council Bluffs in June, 1902.

151. CROWE, WALTER WAYNE. 1895.

Born February 16, 1869, Richmond, Ind. Entered the Institute from Terre Haute in 1891; graduated in the Electrical Engineering Course in 1895. From 1896 to 1898 with Hilly & Heine, Electrical Engineers and Contractors, Chicago. From 1898 to 1902 Mechanical Engineer City Court Building, Chicago. In 1903 with Becker Bros., Electrical Engineers, Chicago. In 1906 rancher, Hussum, Wash. Since 1906 no report has been received at the Institute from Mr. Crowe.

152. DARST, EDWARD ARRENTS. 1895.

Born April 27, 1869, Eureka, Ill. Entered the Institute in 1891, age 20; graduated in the Electrical Engineering Course in 1895. From 1896 to the present time Mr. Darst has been a farmer, and his address is Eureka, Ill.

153. McTAGGART, JAMES RICHARDSON. 1895.

Born January 1, 1875, Richmond, Ind. Entered the Institute from Terre Haute in 1891; graduated in Chemistry in 1895. In 1896 was with the Illinois Steel Company, Chicago. In 1897

Resident Chemist for the Pittsburg Testing Laboratory, Niagara Falls, N. Y. From 1898 to 1900 Chemist Pittsburg Reduction Company, Pittsburg. In 1900 Manager of the Sterling Manufacturing Company, Pittsburg. In 1901 Superintendent Liquid Carbonic Acid Manufacturing Company, Pittsburg. In 1902 in Technical Science Department Carnegie Library, Pittsburg. From 1902 to date City Chemist of Pittsburg, Pa. Was married in Pittsburg in 1902.

154. MILLER, FRANCIS HEGAN. 1895.

Born April 24, 1874, Louisville, Ky. Entered the Institute in 1891; graduated in the Electrical Engineering Course in 1895. Since September 27, 1895, with the Louisville Railway Company as Laborer, Assistant Shop Superintendent, Superintendent Line Work, Assistant Station Superintendent, and in 1900 was made Superintendent of Motive Power, which position he holds to date. Mr. Miller was granted degree of B.A. from University of Louisville in 1891, the degree of M.S. in 1897 and degree of E.E. in 1899, both from Rose. Is an associate member of A. I. of E. E. and Engineers' and Architects' Club of Louisville, Ky. Some of the important work Mr. Miller has been engaged upon is reconstructing the power station of Louisville Railway Company, changing same from straight D. C. distribution to combined D. C. and A. C., with five sub-stations. Was married in Louisville in 1902.

155. MUNDY, WILLIAM OFFUTT. 1895.

Born September 11, 1873, Louisville. Entered the Institute in 1891; graduated in the Electrical Engineering Course in 1895. In 1896 was Shop Superintendent Louisville Railway Company, Louisville, Ky. From 1897 to 1900 Station Superintendent Louisville Railway Company. In 1900 with the General Electric Company, Schenectady, N. Y. From 1902 to 1904 Master Mechanic St. Louis Transit Company, St. Louis, Mo. In 1904 Commercial Engineer Westinghouse Electric Manufacturing Company, Pittsburg, Pa. He was granted the degree of M.S. in 1897 and E.E. in 1899, both from Rose. Mr. Mundy died at Pittsburg March 29, 1905.

156. PHILLIPS, GEORGE W. 1895.

Born October 15, 1870, Champaign, Ill. Entered the Institute from Ellsworth, Ind., in 1891; graduated in the Electrical Engineering Course in 1895. From 1899 to 1900 with Liquid Car-

bonic Acid Gas Company, Chicago. From 1900 to 1902 Chief Draftsman American Smelting and Refining Company, Perth Amboy, N. J. From 1902 to 1903 Constructing Engineer American Smelting and Refining Company, Old Mexico. From 1903 to 1906 Designing, Heyl & Patterson, Engineers, Pittsburg. From 1906 to 1908 Superintendent Construction Trussed Concrete Steel Company, Detroit. At present Manager of the Denver office of the Trussed Concrete Steel Company. One year, 1907 to 1908, Mr. Phillips was a representative of the Trussed Steel Company in the Orient, and erected a seven-story building at Shanghai, China, the first large reinforced concrete building erected in the Far East.

157. ROBINSON, ARTHUR LEE, JR. 1895.

Entered the Institute from Louisville, Ky., in 1891, age 19; graduated in the Electrical Engineering Course in 1895. In 1895 and 1896 was Electrician Southern Railway Company, Knoxville, in charge of lighting plants for the company in Atlanta and Spencer, N. C., and in charge of installation Southern Railway Company's piers, Pinners Point, Va. From the latter part of 1896 to 1898 Assistant Roundhouse Foreman, Spencer, N. C. May, 1898, passed examination and entered United States Navy as Assistant Engineer, and honorably discharged December, 1898. From 1899 to 1901 Electrical Engineer Southern Railway Company, Washington, D. C. From 1902 to 1903 Manager of Eclipse Mine, Auburn, Cal. From 1904 to 1905 Master Mechanic of St. Louis-Louisville Lines, Southern Railway Company, Princeton, Ind. From 1905 to date Electrical Engineer on Canal Construction, Culebra, Panama.

158. SHANEBERGER, EDGAR LEON. 1895.

Entered the Institute from Indianapolis, Ind., in 1891, age 19; graduated in the Civil Engineering Course in 1895. From 1896 to 1899 with the Lake Erie & Western Railway Company, Indianapolis. In 1899 Assistant Engineer Big Four Railway Company, Chicago Division, Indianapolis. In 1900 Assistant to Maintenance of Way Engineer Vandalia Railway, Terre Haute. In 1901 Engineer Maintenance of Way Peoria Division Vandalia Railway, Terre Haute. In 1905 Superintendent Peoria Division Vandalia Railway, Terre Haute. In 1906 Engineer Maintenance of Way Logansport Division, Logansport. From 1907 to the present time with the Interstate Sand and Gravel Company, Terre Haute, Ind. Was married in Terre Haute.

159. SPEED, WILLIAM SHALLCROSS. 1895.

Born September 10, 1873, Louisville, Ky. Entered the Institute in 1891; graduated in the Electrical Engineering Course in 1895. From 1895 to 1897 with the Louisville Cement Company and a member of the firm of J. B. Speed & Co. From 1897 to the present time is Vice-President and General Manager of the Louisville Cement Company and President of the J. B. Speed Company, Louisville, Ky. Was granted degree of M.S. in 1897 and M.E. in 1897, both from Rose. Is a member of the A. S. M. E. and the Engineers' and Architects' Club of Louisville. Was married in Louisville in 1904.

160. TROXLER, LAURENCE EDWARD. 1895.

Entered the Institute from Louisville, Ky., in 1891, age 18; graduated in the Electrical Engineering Course in 1895. From 1896 to 1900 with the Louisville Railway Company, Louisville. From 1900 to 1901 Station Superintendent Louisville Railway Company. In 1902 Electrical Manager L. & P. V. Electric Light Company, Louisville. From 1905 to 1906 Superintendent of Shop Construction United Railway Company, St. Louis, Mo. From 1907 to the present time Electrical Engineer for St. Joseph Lead Company and Doe Run Lead Company, Flat River, Mo.

161. TULLER, ARTHUR VEACH. 1895.

Born August 15, 1872, Milford, Ill. Entered the Institute in 1891; graduated in the Electrical Engineering Course in 1895. Since his graduation and up to the present time has been in the lumber, farming, and banking business at Carrier Mills, Ill. Was married at Mt. Vernon, Ill., July 24, 1901.

162. WADE, ARCHIE E. 1895.

Born November 16, 1871, Monroe County, Mo. Entered the Institute from Boulder Valley, Mont., in 1891; graduated in the Electrical Engineering Course in 1895. From October, 1895, to September, 1897, with the Diamond Electric Company, Peoria, Ill. From September, 1897, to June, 1898, student Bradley Polytechnic Institute, Peoria. From June, 1898, to February, 1903, with the Peoria General Electric Company, People's Gas and Electric Company, and Peoria Gas and Electric Company. From February, 1903, to June, 1903, with Colean Manufacturing Company, Peoria. From July, 1903, to March, 1905, with Ohio

Quarries Company, Amherst, Ohio. From June, 1905, to date with the North Shore Electric Company, Evanston, Ill., as Operating Engineer. Received the degree of M.S. in 1906 from Rose. Is a member of the N. A. S. E. Was married in Peoria in 1905.

163. WIGGINS, WILLIAM D. 1895.

Born April 28, 1873, Richmond, Ind. Entered the Institute in 1891; graduated in the Civil Engineering Course in 1895. From 1896 to 1898 Engineer Corps Pittsburg Division P. C. C. & St. L. Railway, Pittsburg. In 1898 Assistant Chief Engineer Pennsylvania Railway Company, Pittsburg. From 1899 to 1900 Acting Assistant Chief Engineer Pennsylvania Railway Company, Ft. Wayne. In 1901 Assistant Engineer P. C. C. & St. L. Railway, Pittsburg. June, 1901, Engineer Maintenance of Way C. & M. V. Railway, Zanesville, Ohio. October, 1901, Engineer Maintenance of Way C. & M. V. Railway, Cambridge, Ohio. From 1903 to 1905 Engineer Maintenance of Way C. & M. V. Railway, Toledo, Ohio. From 1905 to the present time Engineer Maintenance of Way Pittsburg Division P. C. C. & St. L. Railway, Pittsburg, Pa. Is an associate member A. S. C. E. and member of the A. R. E. M. W. A.

164. BEEBE, ROBERT WALLACE. 1896.

Entered the Institute from Sidney, Ohio, in 1892, age 17; graduated in the Electrical Engineering Course in 1896. In 1897 of the firm of Wells & Beebe, Electrical Contractors, Terre Haute, Ind. In 1898 Electrical Contractor, Terre Haute. In 1901 Manager Motor Truck and Vehicle Company, Columbus, Ohio. From 1903 to 1907 in Sales Department Westinghouse Electric Company, Cleveland, Ohio. No further record has been received at the Institute from Mr. Beebe.

165. BURK, WILLIAM EMMETT. 1896.

Entered the Institute from Richmond, Ind., in 1893, age 21; graduated in Chemistry in 1896. In 1896-7 was Instructor in Chemistry Rose Polytechnic Institute. 1897 and 1898 Assistant Superintendent and Chemist for Granite Basin Mining Company (California). From 1898 to 1905 in charge of Chemical Department Louisville Male High School. Chemical Engineer in Louisville from 1903 to 1906. From September, 1905, to the present time Chief Chemist and Bacteriologist for Louisville

Water Company, Louisville, Ky. Was granted degree of M.S. in 1901 from Rose. Married in Terre Haute in 1897. Mr. Burk has made studies of bituminous sandstones of Kentucky, and of the fluorite, lead, and zinc deposits of Western Kentucky; also on Portland cement industries in Southern Indiana and in the Republic of Mexico. He served as President of the Alumni Association in 1907, and is now Alumni representative on the Board of Managers — at all times a loyal worker.

166. CARR, UHEL ULERY. 1896.

Entered the Institute from Terre Haute, Ind., in 1892, age 17; graduated in the Electrical Engineering Course in 1896. From 1896 to 1900 with the Vandalia Railroad Company, Terre Haute, as Apprentice, Material Inspector, and Shop Foreman. From 1900 to 1901 with the Pressed Steel Car Company, Pittsburg. From 1901 to 1904 with Heyl & Patterson Company, Contracting Engineers, Pittsburg. From 1904 to 1907 with the Eagle Iron Works Company, Terre Haute. From 1907 to the present time Mechanical Engineer Monongahela River Consolidated Coal and Coke Company, Pittsburg, Pa. Mr. Carr was granted degree of M.S. in 1899 from Rose, and was married in August, 1900.

167. DECKER, WALTER LOWRY. 1896.

Born December 2, 1874, Evansville Ind. Entered the Institute in 1892, and graduated in the Electrical Engineering Course in 1896. From 1896 to 1898 with the Sprague Electric Elevator Company, New York City. In 1898 with the Elevator Supply and Repair Company, New York. From 1899 to 1900 Chemist and Assayer Graphic Mines and Smelting Works, Magdalena, N. M. In 1903 in Mechanical Department The Geo. A. Fuller Company, New York. From 1904 to 1907 Electrical Engineer Westinghouse, Church, Kerr & Co., New York City. From 1907 to date Designing Engineer with W. J. McGuire, Limited, Toronto, Can. Mr. Decker was married April 3, 1902, at Brooklyn, N. Y.

168. FAILEY, BRUCE FRANKLIN. 1896.

Born August 20, 1874, Indianapolis. Entered the Institute in 1892; graduated in the Electrical Engineering Course in 1896. From 1896 to 1898 Secretary of the Blair & Failey Company, Terre Haute. Mr. Failey at the present time holds the follow-

ing positions: Treasurer Terre Haute Brewing Company since 1898; Secretary and Treasurer Southern Indiana Gas Company from 1898; Vice-President Wabash Realty and Loan Company from 1903; Secretary Jackson Hill and Coke Company from 1900; Treasurer Lafayette Box Board and Paper Company from 1904; Secretary Root Glass Company from 1901; Director in Terre Haute National Bank and United States Trust Company since their organizations. Mr. Failey was married in Terre Haute April 27, 1898.

169. FARRINGTON, JAMES. 1896.

Born December 28, 1873, Terre Haute. Entered the Institute in 1892; graduated in the Electrical Engineering Course in 1896. From 1896 to 1900 with the Ohio Steel Company, Youngstown, Ohio. In 1900 Assistant Electrician Ohio Steel Company, Youngstown. 1901 Electrical Superintendent and Master Mechanic American Steel and Wire Company, Neville Works, Pittsburg. From 1901 to 1903 General Superintendent Youngstown Engineering Company, Youngstown. From 1903 to date Superintendent Electrical Department LaBelle Iron Works, Steubenville, Ohio. Was granted degree of M.S. in 1898 from Rose. Is a member of the Association of Iron and Steel Electrical Engineers. Was married September 28, 1904.

170. GREEN, FRANK T. 1896.

Born April 12, 1870, Oskaloosa, Iowa. Entered the Institute in 1892; graduated in the Electrical Engineering Course in 1896. From 1897 to 1901 Secretary and Assistant Superintendent Sioux City Brass Works, Sioux City, Iowa. In 1903 Superintendent Fox River Valley Telephone Company, Appleton, Wis. In 1906 with the Pacific States Telegraph and Telephone Company, Los Angeles, Cal. No further record has been received at the Institute.

171. HARRIS, ELLSWORTH BENJAMIN. 1896.

Born May 8, 1873, Hagerstown, Md. Entered the Institute from Indianapolis, Ind., in 1892; graduated in the Chemical Department in 1896. In 1896 was Chemist for Armour & Co., Chicago. From 1897 to 1898 First Assistant Chemist Armour & Co., Chicago. From 1899 to 1901 Chemist Kodak Park Works, Eastman Kodak Company, Rochester. Mr. Harris died March 13, 1901.

172. HUNT, FREDERICK GANO. 1896.

Born April 2, 1872, Freeport, Ill. Entered the Institute from Cincinnati, Ohio, in 1891, and withdrew on account of sickness; reentered in 1892; graduated in the Electrical Engineering Course in 1896. In 1896-1897 graduate student Freiburg, Saxony. From 1897 to 1898 with Fleischmann & Co., Cincinnati. From 1898 to 1900 Assistant Superintendent Riverside Malt and Elevator Company, Cincinnati. In 1901 with the Cincinnati Gold Placer Mining Company, Cincinnati. From 1907 to the present time with the Remington Oil Engine Company, Stamford, Conn. Since graduation he has traveled extensively, and since his marriage in London, England, May 1, 1902, has been in Algiers, Athens, Constantinople, Jerusalem, Cairo, and up the Nile to Assuan, through Italy, Paris, London, and parts of England and Scotland, and also Germany.

173. KLINGER, PETER WERT. 1896.

Born October 29, 1874, Greenville, O. Entered the Institute in 1892; graduated in the Electrical Engineering Course in 1896. From March 1, 1897, to March 29 served as Electrical Inspector for the Barney & Smith Car Company, at the General Electric Works at Schenectady, N. Y. From March 29, 1897, to March 22, 1898, Electrician Barney & Smith Car Company. From March 22, 1898, to September 1, 1902, Machine Foreman in addition to Electrician. From September 1, 1902, to September 1, 1904, office duties for this company. From September 1, 1904, to November 21, 1908, Assistant Superintendent of this company. From November 21, 1908, to date Superintendent of the Barney & Smith Car Company, Dayton, Ohio.

174. KLINGER, WATSON JOSEPH. 1896.

Born February 28, 1871, Arcanum, Ohio. Entered the Institute from Greenville, Ohio, in 1891; withdrew in 1892; reentered in 1893, and graduated in the Electrical Engineering Course in 1896. In 1897 was with the Ellwood Weldless Tube Company, Ellwood, Pa. From 1902 to 1903 Foreman of Assembling Room T. B. Jeffrey & Co., Manufacturers Rambler Automobiles, Kenosha, Wis. In 1903 Erecting Engineer for New Era Iron Works, Dayton, Ohio. From 1904 to 1906 Foreman Tool and Governor Department New Era Gas Engine Company, Dayton, Ohio. In 1906 with the Kay & Ess Company, Dayton, Ohio. At present is Proprietor of the Dayton View Machine Company, Dayton, Ohio.

175. LIGGETT, HARRY THOMPSON. 1896.

Born October 9, 1874, Louisville, Ky. Entered the Institute in 1892, and graduated in Electrical Engineering Course in 1896. From 1896 to 1903 with the Cumberland Telephone Company, Louisville, Ky. From 1903 to date Instructor in Mathematics in Manual Training High School, Louisville, Ky. Was granted degree of M.D. in 1905 from the Kentucky School of Medicine. Is a member of the American Medical Association. Was married January 1, 1900, at Louisville, Ky.

176. MCDARGH, HARRY JOHN. 1896.

Entered the Institute from Dayton, Ohio, in 1892, age 17, and graduated in the Civil Engineering Course in 1896. In 1897 with City Engineer, Dayton, Ohio. 1898 Draftsman and Topographer, Springfield, Ohio River & S. A. Railroad. In 1899 Draftsman City Engineer's office, Dayton, Ohio. 1900 Civil Engineer Dayton Water Works, Dayton. 1901 Engineer West Kootenay Light and Power Company, Rossland, B. C. From 1902 and 1903 First Assistant City Engineer, Dayton. 1904 of Folsom & McDargh, Consulting Civil and Hydraulic Engineers, Dayton. 1905 to 1908 Consulting Civil and Hydraulic Engineer, Dayton, and Maintenance Engineer Water Department, Dayton, Ohio. At present Civil Engineer with Luyster & Lowes, General Contractors, Dayton. Was granted degree of M.S. in 1900 from Rose. Is a member of the American Society of Civil Engineers and the American Water Works Association. Was married in Dayton June, 1899.

177. MCMEANS, ORANGE EDWARD. 1896.

Born July 30, 1869, Richmond, Ind. Entered the Institute in 1892; graduated in the Electrical Engineering Course in 1896. From 1896 to 1899 Instructor in Drawing Rose Polytechnic Institute. From 1899 to 1900 Assistant Professor Mechanical Drawing University of Kansas, Lawrence, Kan. From 1900 to 1902 Mechanical Engineer Richmond City Mill Works, Richmond, Ind. From 1902 to 1904 Chief Draftsman Mill Engineering Department Nordyke & Marmon Company, Indianapolis. From 1904 to date of the firm of McMeans & Tripp, Consulting Engineers, Indianapolis, Ind. Was granted degree of M.S. in 1900 and degree of M.E. in 1901 from Rose. Is a junior member A. S. of M. E. Was married November 26, 1896.

178. MEADOWS, HARVEY HATCHETT. 1896.

Entered the Institute from Evansville, Ind., in 1890, age 18; withdrew in 1901; reentered in 1893; graduated in the Civil Engineering Course in 1896. From 1896 to 1898 with the Pittsburg Testing Laboratory in Pittsburg, Philadelphia, and New York. From 1898 to the present time Assistant District Sales Manager of the Babcock & Wilcox Company, Atlanta, Ga.

179. MERIWETHER, RICHARD. 1896.

Born October 13, 1875, Frankfort, Ky. Entered the Institute from Louisville, Ky., 1892; graduated in the Electrical Engineering Course in 1896. In 1897 in Motive Power Department Southern Railway, Knoxville, Tenn. From 1898 to 1901 with the Western Electric Company, Chicago. In 1902 Superintendent Underground Cable Company, Chicago. In 1903 Assistant Superintendent of Power Louisville City Railway, Louisville. 1905 Superintendent of Lines and Feeders Louisville Railway Company, Louisville. In 1906 Superintendent Overhead Construction Louisville Railway Company, and from 1907 to the present time General Superintendent of Louisville & Eastern Railroad Company, Louisville, Ky. Is a member of the A. I. E. E. and Engineers' and Architects' Club of Louisville, Ky.

180. O'BRIEN, BARRINGTON. 1896.

Entered the Institute from St. Peter, Minn., in 1888, age 19; withdrew in 1892; reentered in 1895, and graduated in the Electrical Engineering Course in 1896. In 1898 Superintendent Electric Light Company, St. Peter, Minn. Since 1899 no report has been received.

181. RICE, OSCAR GUIDO. 1896.

Born May 2, 1876, Vienna, Austria. Entered the Institute from Terre Haute, Ind., in 1892, and graduated in the Electrical Engineering Course in 1896. In 1897 in Department of Maintenance New York Telephone Company, New York. In 1898 in Brooklyn, N. Y. From 1900 to 1902 with the B. F. Sturtevant Company, New York. Was married in Chicago April 23, 1902, and died of typhoid fever in Brooklyn, N. Y., October 6, 1902.

182. RIDGELY, CLARENCE MEDILL. 1896.

Born November 26, 1871, Adams County, Ill. Entered the Institute from Galesburg, Ill., in 1891; withdrew on account of

ill health; reentered 1894; graduated in the Electrical Engineering Course in 1896. From July, 1896, to April, 1897, Machinist in Locomotive Shops of Chicago & Alton Railroad, Bloomington, Ill. From April, 1897, to December, 1898, Circulation Manager for *Galesburg Evening Mail*, Galesburg, Ill. From March, 1899, to July, 1901, Draftsman Litchfield Foundry and Machine Company, Litchfield, Ill. From July, 1901, to December, 1902, Superintendent Ætna Foundry and Machine Company, Litchfield, Ill. From December, 1902, to the present time Mechanical Engineer Litchfield Foundry and Machine Company, Litchfield, Ill. In this capacity some of his more important work has been the general improvement of designs and construction of mine haulage and hoisting engines, also of endless-rope haulage machinery for the handling of standard railroad cars about coal and ore storage plants, steamship docks, etc.; also head gear arrangements for self-acting gravity inclines. Mr. Ridgely was married July 29, 1897, at Bloomington, Ill.

183. SANBORN, WALLIS REMSEN. 1896.

Born May 20, 1874, Rockford, Ill. Entered the Institute in 1892; graduated in the Civil Engineering Course in 1896. In 1897 with the H. & B. I. Railroad, Hammond, Ind. From 1898 to 1899 Mining Engineer, Klondike. In 1900 Division Engineer I. I. I. Railroad Company, Streator, Ill. In 1901 Acting Roadmaster I. I. I. Railroad Company, Kankakee, Ill. From 1904 to 1906 Engineer Indiana, Illinois & Iowa Railroad, Kankakee, Ill. From 1907 to the present time Treasurer and General Manager Lehigh Stone Company, Kankakee, Ill. Was granted degree of M.S. from Rose in 1900. Is a member of W. S. E. Mr. Sanborn was married June 19, 1901.

184. SANFORD, LINUS, JR. 1896.

Entered the Institute from Jackson, Mo., in 1892, age 19, and graduated in the Electrical Engineering Course in 1896. In 1897 was with Brooks & Ponder, Civil Engineers, Cape Girardeau, Mo. From 1898 to 1900 in Jackson, Mo., and from 1900 to 1901 with the Western Electric Company, Chicago, Ill. Since 1901 no report has been received.

185. SINKS, FRANK FOREST. 1896.

Born May 12, 1873, West Milton, Ohio. Entered the Institute from Troy, Ohio, in 1892; graduated in the Civil Engineering

Course in 1896. In 1897 with the H. & B. I. Railroad, Hammond, Ind. From 1898 to 1900 with the Chicago, Hammond & Western Railroad Company, Lagrange, Ill. In 1900 Office Engineer I. I. & I. Railroad, Streator, Ill. In 1901 Pittsburg Testing Laboratory, Chicago. From 1903 to 1905 with Theodore Condron, Consulting Engineer, Chicago. From 1906 to date Vice-President Condron & Sinks, Civil Engineers, Chicago, Ill.

186. SMITH, FERDINAND ELBERT, JR. 1896.

Born October 1, 1874, Prattville, Ala. Entered the Institute from Birmingham, Ala., in 1892, and graduated in the Electrical Engineering Course in 1896. From 1897 to 1901 with Smith Sons Gin and Machine Company, Birmingham. From 1904 to the present time Superintendent Avondale Factory Continental Gin Company, Avondale, Ala.

187. VAN AUKEN, JAMES MILTON. 1896.

Born June 9, 1873, Mishawaka, Ind. Entered the Institute from Chicago in 1892; graduated in the Civil Engineering Course in 1896. In the latter part of 1896 was with the C. U. Telephone Company, Indianapolis, Ind. In 1897 Assistant City Engineer Terre Haute, Ind. From 1898 to 1899 Civil Engineering work in Vigo and Parke Counties. From 1900 to 1902 Draftsman Bellefontaine Bridge and Iron Company, Bellefontaine, Ohio. From 1902 to 1903 Chief Engineer Elkhart Bridge Company, Elkhart, Ind. From 1905 to the present time Contracting Engineer for Steel and Iron Structures, South Bend, Ind.

188. WALSER, EDWARD. 1896.

Born March 5, 1874, St. Joseph, Mo. Entered the Institute from Terre Haute, Ind., in 1892; graduated in Chemistry in 1896. In 1897 graduate student Rose Polytechnic Institute. From 1898 to 1900 Cyanide Expert General Gold Extracting Company, Denver. 1900 with the Cochiti Gold Mining Company, Bland, N. M. In 1901 with Fox & Walser, Assayers and Chemists, Denver. 1903 Cyanide Expert Gold and Silver Extraction Company of America, Ltd., Denver. 1904 Manager Cyanide Department Dorcas Mining, Milling and Development Company, Florence, Col. 1905 and 1906 Chief Chemist Montana Zinc Company, Walkerville, Mont. From 1906 to date Chief Chemist Pittsburg and Montana Copper Company, Butte, Mont.

189. WELLS, GEORGE EUGENE. 1896.

Entered the Institute from Terre Haute, Ind., in 1892, age 17, and graduated in the Electrical Engineering Course in 1896. In 1897 with Terre Haute Electric Company. In 1898 Superintendent Electrical Contracting Department Indianapolis District Telephone Company, Indianapolis. From 1899 to 1901 in Engineering Department Wagner Electric Manufacturing Company, St. Louis. In 1901 of the firm of Reubel & Wells, Consulting Electrical Engineers, St. Louis. 1903 of the firm of Reubel-Schwedtman & Wells, Consulting Electrical and Mechanical Engineers, St. Louis. In 1908 resigned from this firm to accept a position as Chief Engineer in charge of the Mechanical Department of the Anheuser-Busch Brewing Company, and holds this position to date. Received degree of M.S. in 1899 and of E.E. in 1901, both from Rose. Is an active member of the A. I. E. E. Was married in St. Louis in 1903.

190. WERK, ISAAC MICHAEL LOUIS. 1896.

Entered the Institute from Cincinnati, Ohio, in 1892, age 19, and graduated in Chemistry in 1896. From 1896 to 1898 Chemist for the M. Werk Company, Cincinnati. Since that time has been in the oil business in Cincinnati. Is a member of the American Chemical Society.

191. ARN, WILLIAM GODFREY. 1897.

Entered the Institute from Scottsboro, Ala., in 1893, age 16; graduated in Civil Engineering Course in 1897. From 1897 to 1900 was connected with the Louisville & Nashville Railroad as Rodman, Masonry Inspector and Building Inspector L. & N. Terminal Company, Nashville, Tenn. From 1901 to 1905 Assistant Engineer Maintenance of Way; 1905-6 Division Roadmaster L. & N. R. R. In 1906 Superintendent Southern Bitulithic Company, Nashville. In 1907 Assistant Engineer Illinois Central, Birmingham, Ala., and at present Assistant Engineer Maintenance Department, Corinth, Miss. Had charge of terminal construction and stations in Nashville, New Orleans and Birmingham.

192. CAMP, THEODORE LYMAN. 1897.

Entered the Institute from Jackson, Mich., in 1893, age 18; graduated in the Electrical Engineering Course in 1897. In 1898 was Mechanical and Electrical Engineer for the American Elec-

tric Vehicle Company, Chicago. From 1899 to 1901 Manufacturer of Soap Wrapping Machines, Chicago. In 1902 Manager Mechanical Department Camp Wrapping Machine Company, Chicago. From 1904 to date Manager United Wrapping Machine Company, New York City, N. Y. Was married August 21, 1901, at Buffalo, N. Y. Mr. Camp exhibited his first soap wrapping machine at the Commencement in 1897. Its design was his thesis subject.

193. CHANDLER, BENJAMIN FOSTER. 1897.

Entered the Institute from South Coventry, Conn., in 1893, age 23; graduated in the Electrical Engineering Course in 1897. From 1899 to 1901 with the Electric Light Company, Northampton, Mass. In 1901 Electrician for the American Bicycle Company, Cleveland, Ohio. In 1905 and 1906 graduate student Massachusetts Institute Technology, Boston, Mass. In 1907 in Testing Department General Electric Company, Schenectady, N. Y. No record has been received at the Institute from Mr. Chandler since 1907.

194. FRANK, EDMUND. 1897.

Entered the Institute from Petersburg, Ind., in 1893, age 17, and graduated in the Electrical Engineering Course in 1897. Graduate student Johns Hopkins University, 1898-9. In Testing Department General Electric Company, Schenectady, 1899-1901. In 1901 with the General Electric Company at Cincinnati, Ohio. July 18, 1901, his body was found floating in the river at Memphis, Tenn. Was last seen alive July 16, at 11:45 p. m., at the Traction Company's power house, where he was erecting machinery. There was a contusion over his eye and he had been robbed of \$125. This information was received from his brother, Mr. Sol Frank, of Petersburg.

195. FRY, CHARLES HERMAN. 1897.

Entered the Institute from Fort Worth, Texas, in 1893, age 19; graduated in the Electrical Engineering Course in 1897. From 1898 to 1900 Assistant in Office of Superintendent of Motive Power Cincinnati, Hamilton & Dayton Railroad, Lima, Ohio. 1901 graduate student in Railway Engineering Purdue University. From June, 1901, to February, 1902, with the Chicago & Alton Railroad, Bloomington. From February, 1902, to the present time Associate Editor of the *Railroad Gazette* and of

the *Railroad Age Gazette*, Chicago. Was granted degree of M.S. in 1907 from Rose, and degree of B.S.M.E. from Purdue University, 1901.

196. GORDON, ARTHUR FRANKLIN. 1897.

Born October 16, 1875, Terre Haute. Entered the Institute in 1893; graduated in the Electrical Engineering Course in 1897. In 1897 with the Standard Wheel Company, Terre Haute. 1898 and 1899 Engineering Department C. E. & I. Railroad, Danville, Ill. In 1900 with the Liquid Carbonic Acid Company, Pittsburg. In 1901 with S. V. Huber & Co., Constructing Engineers, Pittsburg. From 1902 to 1906 Draftsman with McClintock-Marshall Contracting Company, Rankin, Pa. In 1907 Chief Draftsman Union Iron Works, Cincinnati, Ohio. From 1908 to the present time Foreman Signal Department Rock Island Railway, Wilton Junction, Iowa. Was married August 14, 1900, in Terre Haute, Ind.

197. HALL, JAY HOUGHTON. 1897.

Entered the Institute from Ypsilanti, Mich., in 1893, age 18; graduated in the Electrical Engineering Course in 1897. After graduation till 1899 Chief Electrician at Illinois Institute for Deaf and Dumb, Jacksonville, Ill. From 1899 to 1901 Draftsman in Electrical Department Homestead Steel Works of the Carnegie Steel Company at Munhall, Pa. From 1901 to 1902 Electrical Engineer Chicago & Eastern Illinois Railroad Company, Danville, Ill. From 1902 to 1904 Chief Draftsman and Assistant Superintendent Youngstown Engineering Company, Youngstown, Ohio. From 1904 to the present time with the Electric Controller and Manufacturing Company, Cleveland, Ohio, as Draftsman, Chief Draftsman, Assistant Engineer, and at present Sales Manager. Was granted degree of M.S. in 1906 and degree of E.E. in 1908, both from Rose. Member A. I. E. E. Married May 11, 1909.

198. HANEY, JAMES BRIGGS. 1897.

Entered the Institute from Wellsburg, W. Va., in 1893, age 24; graduated in the Electrical Engineering Course in 1897. In 1898 with the Lozier Manufacturing Company, Toledo, Ohio. In 1899 Draftsman with the Harbeser & Walker Company, Pittsburg. In 1900 Draftsman with the Riter-Conley Manufacturing Company, Pittsburg, and Draftsman in United States

Ordnance Department, Washington, D. C., until 1904. In 1904 Draftsman Ordnance Department at large United States Army, Fort Hancock, N. J. From 1905 to 1906 Draftsman Ordnance Department at large United States Army, Washington, D. C. At the present time Fortification Draftsman United States Engineer Department, Honolulu, H. T.

199. HEICHERT, HERMAN SMITH. 1897.

Entered the Institute from Marion, Ind., in 1893, age 19; graduated in the Electrical Engineering Course in 1897. In 1898 with the P. C. C. & St. L. Railroad, Logansport, Ind. From 1899 to 1900 Instructor in Mechanical Engineering Worcester Polytechnic Institute, Worcester, Mass. In 1901 Designer in Winchester, Mass. From 1902 to 1908 Draftsman Pittsburg Plate Glass Company, Pittsburg, Pa. From 1908 to the present time Engineer with the Pittsburg Plate Glass Company, Ford City, Pa. Was married in 1902.

200. HELLWEG, JOHN HENRY, JR. 1897.

Born August 25, 1875, Chicago. Entered the Institute from Hayward, Wis., in 1893; graduated in the Electrical Engineering Course in 1897. Since graduation has been with the Western Electric Company, Chicago, Ill., and at present is the Telephone Sales Department Manager for the company at the factory, Hawthorne, Ill. Was married April 12, 1899.

201. HOLDERMAN, CHAUNCEY HARCOURT. 1897.

Entered the Institute from Hutsonville, Ill., in 1891, age 21; graduated in the Civil Engineering Course in 1897. From 1897 to 1901 Secretary of the Hutsonville Brick and Tile Company, Hutsonville, Ill. In 1902 County Surveyor Crawford County, Mt. Carmel, Ill. In 1902 in Maintenance of Way Department Big Four Railroad Company, Mattoon, Ill. From 1904 to 1905 Resident Engineer with Indianapolis Southern Railway, Indianapolis. In 1906 with Engineering Department Big Four Railroad, Robinson, Ill. From 1907 Superintendent Manatee Light and Power Company, Bradentown, Fla. Was married October 12, 1905.

202. INGLE, JOHN DAVID, JR. 1897.

Born October 5, 1875, Evansville. Entered the Institute from Oakland City, Ind., in 1893; graduated in the Civil Engineering

Course in 1897. Since graduation with the Ayeshire Coal Company as Surveyor, Superintendent, and now General Manager, Oakland City, Ind. Was married October 5, 1904.

203. **KESSLER, JOHN JACOB, JR.** 1897.

Entered the Institute from Terre Haute, age 17; graduated in 1897 in the Chemistry Course. From 1897-99 Chemist in Testing Laboratory General Electric Company, Schenectady, N. Y. From 1899-1901 Chemist and Engineer of Insulation for the Wagner Electric and Manufacturing Company, St. Louis, Mo. From 1901 to date with the Dielectric Manufacturing Company as Vice-President, General Manager, and, since 1907, President and General Manager. In 1905 associated with H. E. Wiedemann, firm of Kessler & Wiedemann, Consulting Chemists, St. Louis. His work has been largely in the study and preparation of electrical insulating materials now manufactured by the Dielectric Company.

204. **LENDI, JOHN HENRY.** 1897.

Born in Dubuque, Iowa, June 25, 1874. Entered the Institute from Wichita, Kan., in 1893; graduated in the Electrical Engineering Course in 1897. In 1898 graduate student at Rose Polytechnic Institute. From September, 1898, to September, 1899, in the Engineering Department of the Chicago Telephone Company, Chicago. From September, 1899, to September, 1901, in charge of the Experimental Department of the Kellogg Switchboard and Supply Company, Chicago. From September, 1901, to February, 1904, in charge of the Experimental Department Western Electric Company, Chicago. From February, 1904, to the present time Electrical Engineer of the Belden Manufacturing Company, Chicago, Ill. Was married June 27, 1908, in Chicago.

205. **LUFKIN, JOHN EDWIN, JR.** 1897.

Entered the Institute from Anna, Ill., in 1893, age 19; graduated in the Electrical Engineering Course in 1897. From 1897 to 1900 Engineer in various capacities, mainly in Texas and Mexico. In 1900 Erecting Engineer Electric Plant, Boswell, N. M. From October 1, 1901, Electrical Engineer C. & E. I. Railway, Danville, Ill. From 1902 to 1904 in Electrical Work in Mexico. In 1905 with the Union County Traction and Power Company, Anna, Ill. 1906 Superintendent Construction

Pocahontas Ice and Power Company, Pocahontas, Ark. From 1907 to the present time Superintendent of Mines, Santa Eulalia, Union Mining Company, Chihuahua, Mexico.

206. MARTIN, WALTER HUBER. 1897.

Born May 13, 1875, Danville, Ill. Entered the Institute from Danville, Ill., in 1893, and graduated in the Civil Engineering Course in 1897. From June, 1897, to May, 1899, Chief Engineer Illinois Eastern Hospital for Insane, Kankakee, Ill. Since May, 1899, to the present time City Engineer Danville, Ill.

207. MEYER, AUGUST HENRY. 1897.

Born April 17, 1875, Appleton, Wis. Entered the Institute in 1893; graduated in the Electrical Engineering Course in 1897. From 1897 to 1901 Superintendent Camden Light and Power Company, Camden, Ark. From 1901 to date Secretary and Treasurer of Langstadt & Meyer Construction and Supply Company, Appleton, Wis. His more important work has been the construction of electric, steam, hydro-electric, and water works plants.

208. MOORE, ODUS BURDETTE. 1897.

Born December 29, 1871, Cedar City, Mo. Entered the Institute from Fulton, Mo., in 1893, and graduated in the Electrical Engineering Course in 1897. In 1908 Assistant Mechanical Engineer Hawley Down Draft Furnace Company, Chicago. In 1899 was Electrician in United States Navy on Gunboats Yankton and Vixen. From 1900 to 1905 in Electrical Engineering Department Westinghouse Electric and Manufacturing Company, Pittsburg. In 1906, because of ill health of his brother, temporarily became partner and Proprietor of Moore's Drug Store, Fulton, Mo. Was married October 23, 1902. While with the Westinghouse Company his work was especially on insulation. He contributed several articles to scientific journals on this subject, and holds some patents.

209. NEWBOLD, ROGER MERRICK. 1897.

Born May 30, 1876, Pittsburg, Pa. Entered the Institute from Birmingham, Ala., in 1893; graduated in the Electrical Engineering Course in 1897. In 1898 Fuel Inspector L. & N. Railway, Birmingham, Ala. From 1899 to 1901 of R. M. Newbold

& Co., Consulting Engineers and Contractors, Birmingham. 1901 with the Louisville Railway Company, Louisville, Ky. From 1902 to 1903 Electrician L. & N. Railway, Birmingham. 1904 and 1905 Patentee and Manufacturer Newbold Railway Electric Lighting System, Louisville and Chicago. From 1906 to the present time Electrical Engineer for Adams & Westlake Company, Chicago. Was granted degree of M.S. in 1907 and degree of E.E. in 1908, both from Rose. Is a member of the Engineers' Association of the South and A. I. E. E. Was married in November, 1900, at Monrovia, Cal. Holds a number of patents protecting the Adlake-Newbold Car Axle Lighting System.

210. PHILIP, ROBERT ASHBY. 1897.

Born August 2, 1874, Sacramento, Cal. Entered the Institute in 1893; graduated in the Electrical Engineering Course in 1897. From 1897 to 1900 with the General Electric Company, Schenectady, N. Y. In 1900 with the Tacoma Electric Company, Tacoma, Wash. 1901 with the Seattle Electric Company, Seattle, Wash. In 1903 and 1904 Electrical Engineer Columbia Improvement Company, Tacoma, Wash. In 1905 in the Engineering Department Stone & Webster, Boston, Mass. From 1906 to date Electrical Engineer of the Stone & Webster Engineering Corporation, Boston, Mass. Is a member of the Pacific Northwest Society of Engineers (Seattle) and associate member of the A. I. E. E. Was married May 25, 1904. Since 1904 has had general oversight of the electrical engineering work done by Stone & Webster for the railway and lighting companies which they manage, the number of which at present is about thirty, and distributed in location from Key West, Fla., to Bellingham, Wash. Also design and installation of large Western Hydro-electric Power plants.

211. PIERSON, TEMPLE GUY. 1897.

Born February 3, 1875, Freedom, Ind. Entered the Institute from Spencer, Ind., in 1892; withdrew in 1893, and reentered in 1894; graduated in the Civil Engineering Course in 1897. Since graduation has been Manager of the J. L. Pierson Lumber Company, Spencer, Ind. Has been a member of the House of Representatives, Indiana Legislature, and is a member of the State Executive Committee of the Young Men's Christian Association. Was married in Terre Haute in June, 1906.

212. RYPINSKI, MAURICE CHARLES. 1897.

Entered the Institute from Bryan, Texas, in 1893, age 16; graduated in the Electrical Engineering Course in 1897. From 1897 to 1902 Engineer with the General Electric Company, Schenectady, N. Y. From 1902 to 1904 Superintendent of Factory of the Empire Electrical Instrument Company, New York City. From 1904 to 1906 President of the Simplex Company, Newark, N. J. From 1906 to 1908 in the Engineering Department of the Westinghouse Electric and Manufacturing Company, New York City. Was married in November, 1905.

213. SHAVER, ARCHIE GRANT. 1897.

Entered the Institute from Lakeview, Mich., in 1893, age 18; graduated in the Electrical Engineering Course in 1897. From 1898 to 1900 Electrical Repairman C. & E. I. Railroad Company, Danville, Ill. In 1900 Electrician C. & E. I. Railroad Company, Danville, Ill. 1901 to 1906 Signal Engineer Union Pacific Railroad Company, Omaha, Neb. From April, 1906, to 1908 with the Hall Signal Company at Garwood, N. J. From June, 1908, to the present time Signal Engineer Chicago, Rock Island & Pacific Railroad, Chicago, Ill. Was married February 12, 1902, in Danville, Ill.

214. TUCKER, CLARENCE HOWE. 1897.

Entered the Institute from Washington, D. C., in 1893, age 17, and graduated in the Electrical Engineering Course in 1897. From 1898 to 1900 with Driggs-Seabury Gun and Ammunition Company, Derby, Conn. In 1900 in Designing and Experimental Department Otis Elevator Company, Yonkers, N. Y. Mr. Tucker died May 8, 1900.

215. WESTFALL, HERBERT COCHRAN. 1897.

Entered the Institute from Terre Haute in 1893, age 19; graduated in the Electrical Engineering Course in 1897. Was graduate student in Civil Engineering in 1898 at Rose. From 1899-1901 with the Big Four Railroad at Mattoon, Ill. Then till 1903 in Engineering Department C. O. & G. Railroad Company, Little Rock, Ark. From 1903-05 with the Chicago, Rock Island & Pacific Railroad, Chicago. From 1905-07 Locating Engineer Chicago, Milwaukee & St. Paul Railroad in Washington and Montana. From 1908 to date Assistant Engineer Northern Pacific Railroad, St. Paul, Minn. Married in Terre Haute in 1902.

216. WILLIUS, GUSTAV, JR. 1897.

Entered the Institute from St. Paul, Minn., in 1893, age 20; graduated in the Electrical Engineering Course in 1897. In 1898 Engineer for the Mississippi Valley Telephone Company, St. Paul, Minn. From 1899 to 1901 in charge of Electrical Engineering work for the Great Northern Elevator Company, West Superior, Wis. From October, 1901, to 1903 in charge of Electrical Engineering work for the Great Northern Railway Lines, St. Paul. 1905 and 1906 Mechanical Engineer Great Northern Railway Lines, St. Paul. 1907 Mechanical Engineer for Robinson, Cary & Sands Company, St. Paul, Minn., which position he still holds.

217. AUSTIN, NED MAGILL. 1898.

Born October 12, 1874, Terre Haute. Entered the Institute in 1894; graduated in Chemistry in 1898. After graduation employed in the laboratory of Parke, Davis & Co. at Detroit. In 1899 was Chemist for Kirkpatrick & Co., Ltd., Leechburg, Pa. In 1900 Assistant Chemist for Shoenberger Works of the American Steel and Wire Company, Pittsburg, and with the Duquesne Steel Works, Duquesne, Pa. In 1901 Chemist for Walser Soap Company. In 1902 Chemist for Apollo Iron and Steel Company, Vandergrift, Pa. From 1903 to 1904 Metallurgist for United Engineering and Foundry Company, Vandergrift, Pa. From 1905 to 1906 Superintendent of Open Hearth Furnaces for the American Sheet Steel Company, Vandergrift, Pa. In 1907 with the United Engineering and Foundry Company, Vandergrift, Pa. At present with the American Roll and Foundry Company, Canton, Ohio. Was married on October 15, 1901, in Leechburg, Pa.

218. BRACHMANN, FREDERICK CHARLES. 1898.

Entered the Institute from Cincinnati, Ohio, in 1894, at the age of 19, and graduated in the Electrical Engineering Course in 1898. In 1898 Draftsman for Dietz, Schumacher & Boye, Machine Tool Builders, Cincinnati, O. From 1899 to 1900 in Testing Department General Electric Company, Schenectady, N. Y. In 1901 in Switchboard Department General Electric Company, Schenectady, N. Y. While still in the service of the General Electric Company was affected by severe rheumatic ailments, which caused him to leave the service of the company and go

to his home in Cincinnati, Ohio. He has remained at Cincinnati since, and whenever physically able assists his father in business. He has maintained his interest in engineering work, and remains a loyal son of Rose. His present address is No. 2632 Eden Avenue, Cincinnati, Ohio.

219. EASTWOOD, ARTHUR CLARK. 1898.

Born February 11, 1877, Louisville, Ky. Entered the Institute in 1894; graduated from the Electrical Engineering Course in 1898. From July to October, 1898, was with the firm of Meighan & Co., Birmingham, Ala. From October, 1898, to March, 1899, was in the Electrical Department of the Homestead Steel Works for the Carnegie Steel Company at Munhall. From 1899 to 1900 Superintendent of the Electrical Department of the Tennessee Coal, Iron and Railroad Company, Ensley, Ala. From 1900 to date has been associated with the Electric Controller and Supply Company, of Cleveland, Ohio, which changed its firm name last year to the Electric Controller and Manufacturing Company. He rose from the position of Engineer to that of General Manager and Engineer, then Vice-President and General Manager, and is now the President. From 1901 to 1905 also acted as Consulting Engineer for the Wellman-Seaver Engineering Company, of Cleveland, Ohio. Received degree of M.S. in 1900 and that of E.E. in 1902 from Rose. Is a member of the A. I. E. E., Franklin Institute of Pennsylvania, New York Railroad Club, and the Engineering Club of New York. Mr. Eastwood's work has been mainly along the line of devising and developing electrical devices especially in iron and steel works for the control of various machinery there used. He also has given his attention to the developing of lighting magnets. Many of his devices are patented, having control of some ninety or more patents. Married in January, 1891, at Birmingham, Ala.

220. FLETCHER, THOMAS. 1898.

Entered the Institute from Little Rock, Ark., age 18, and graduated in the Electrical Engineering Course in 1898. From 1899 to 1901 Vice-President of the Moose & Gin Company, Morrillton, Ark. In 1906 President Burrow-Moose Mercantile Company, Morrillton, Ark. From 1907 to date has devoted his attention to farming, and his address is Scotts, Ark.

221. FORD, WILLIAM ELLIS. 1898.

Entered the Institute from Little Rock, Ark., in 1894, age 18; graduated in the Civil Engineering Course in 1898. From graduation to April, 1906, was on construction work on railroads in Arkansas, Indian Territory, Oklahoma, and Kansas. Since that time he has been in the Philippine Islands superintending construction work on the Philippine Railway. Has several thousand men under his direction. His work is arduous and the climate trying, but he expects to remain unless his health breaks down.

222. FREUDENREICH, WILLIAM FREDERICK. 1898.

Born December 21, 1877, Terre Haute. Entered the Institute in 1894; graduated in the Electrical Engineering Course in 1898. From July, 1898, to May, 1902, Assistant Examiner United States Patent Office, Washington, D. C. From May, 1902, to June, 1904, practiced Patent Law in Boston, Mass. From June, 1904, to April, 1907, Assistant Attorney in Patent Department General Electric Company, Schenectady, N. Y. From April, 1907, to the present time practiced Patent Law in Chicago. Is member of the firm of Chamberlin & Freudenreich, Chicago. Was granted degree of LL.B. in 1901 from National Law School and degree of M.P.L. in 1902 from the Columbian University. Was married January 15, 1903, in New York City.

223. HUBBELL, JOHN EDMUND. 1898.

Born October 11, 1876, Altona, Ill. Entered the Institute in Sophomore Class, 1895, and graduated in the Electrical Engineering Course in 1898. From 1898 to 1901 Assistant Examiner Patent Office, Washington, D. C. From 1902 to 1906 Assistant Attorney in Patent Department General Electric Company, Schenectady, N. Y. From 1906 to date Patent Attorney with Francis T. Chambers, Philadelphia, Pa. Was given degree of LL.B. in 1901 from National University and degree of M.P.L. in 1902 from Columbian University. Is married.

224. KIDDER, NED SOLON. 1898.

Born April 10, 1874. Entered the Institute in 1894, and graduated in the Electrical Engineering Course in 1898. In 1898 with Lead and Zinc Mines, Webb City, Mo. In 1899 with the Pope Manufacturing Company, Storage Battery Department, Hartford, Conn. From 1900-04 with the Wabash Mills, Terre

Haute. In 1904 also on Government Public Land Survey, Isle Royale, Lake Superior. In 1905-06 City Engineer Terre Haute. From 1907 to the present time Salesman and Promoter with American Asphaltum and Rubber Company, Chicago. Married December 20, 1900, at Terre Haute.

225. KLOER, CHARLES. 1898.

Entered the Institute from Terre Haute, Ind., in 1894, age 18, and graduated in the Electrical Engineering Course in 1898. In 1899 in the T. H. & I. Railway Shops, Terre Haute. From 1900 to date with the Liquid Carbonic Acid Manufacturing Company, Chicago, Ill.

226. KLOER, GUSTAVE FREDERICK. 1898.

Entered the Institute from Terre Haute, Ind., in 1894, age 20; graduated in the Electrical Engineering Course in 1898. In 1899 in the T. H. & I. Railway Shops, Terre Haute. From 1900 to date with the Liquid Carbonic Acid Manufacturing Company, Chicago.

227. LANSDEN, JOHN McMURRAY. 1898.

Born July 8, 1877, at Cairo, Ill. Entered the Institute in 1894; graduated in the Electrical Engineering Course in 1898. From 1899 to 1901 of J. M. Lansden & Co., Electrical Engineers and Manufacturers, Birmingham, Ala. In 1903-04 President of the Birmingham Electrical and Manufacturing Company. From 1905 to date of the Lansden Company, Electric Automobiles, Newark, N. J. Has been associated with Thomas Edison in the perfection of the Edison Storage Battery used in the Lansden Automobile.

228. MONTGOMERY, JOHN TULL. 1898.

Born March 4, 1876, Carrollton, Mo. Entered the Institute in 1894; graduated in the Civil Engineering Course in 1898. 1899 Draftsman with the Falkenau Construction Company, Chicago. From 1900 to 1905 Resident Manager Roebling Construction Company, Chicago. In 1906 Manager M. A. Mead & Co., Manufacturers of Watches, Pittsburg, Pa. From 1908 to date Vice-President and Manager M. A. Mead & Co., New York City. Some of his more important work has been the fireproofing of the Iroquois Theater of Chicago, of the Thomas Orchestra Building of Chicago, the First National Bank of Cincinnati. Was married June 18, 1901, in Chicago.

229. PIRTLE, CLAIBORNE. 1898.

Born December 4, 1875, Louisville, Ky. Entered the Institute in 1894; graduated in the Electrical Engineering Course in 1898. In 1899 in Testing Department and 1900 in the Lighting Department General Electric Company, Schenectady, N. Y. From 1901 to the spring of 1904 Agent for the General Electric Company in North Carolina and Southern Virginia. From April, 1904, to the present time with the Electric Controller and Manufacturing Company, Cleveland, Ohio, and now the Vice-President and General Manager. Was married early in 1909.

230. ROBERTS, SHELBY SAUFLEY. 1898.

Born April 13, 1874, at Louisville, Ky. Entered the Institute in 1894; graduated in 1898. From 1899-1905 with the Louisville & Nashville Railway, from Track Apprentice and Rodman to Engineer in Charge of Terminal Construction, Roadmaster, Engineer Maintenance of Way, and Office Engineer. From 1905-08 Assistant Engineer Illinois Central Railway, Chicago. From 1908 to date Assistant Professor Railway Civil Engineering, University of Illinois. Was granted degree of C.E. from Rose in 1907. Is member of the Engineering Association of the South, A. R. E. and M. W. Association, A. S. C. E., Engineers' and Architects' Club of Louisville. Was married in Louisville November 26, 1901. Has had much work in planning terminals. Has in preparation a "Handbook of Track Formule and Tables."

231. RYDER, WALDO BRIGHAM, JR. 1898.

Born June 4, 1876, Charlotte, N. C. Entered the Institute in 1894; graduated in the Electrical Engineering Course in 1898. In 1899 with the Southern Railway, Charlotte, N. C. From 1900 to 1901 Electrician Union Copper Mine, Gold Hill, N. C. In 1903 Treasurer Ryder Wagon Works, Charlotte, N. C. 1904 Secretary and Assistant Superintendent Ryder Wagon Works, Thomasville, N. C. In 1906 with the Charlotte Cotton Exchange and Board of Trade, Charlotte, N. C. Mr. Ryder died September 26, 1907, after a few months' illness.

232. SCHNEIDER, FREDERICK WILHELM. 1898.

Born September 3, 1875, Evansville, Ind. Entered the Institute in 1894, and graduated in the Electrical Engineering Course in

1898. From 1899 to 1901 with the General Electric Company, Schenectady, N. Y. In 1904 Electrical Inspector of New York City, N. Y. Mr. Schneider was married April 3, 1902, in New York City. Since 1904 no record has been received at the Institute in regard to him.

233. STEWART, MORTON BISHOP. 1898.

Born September 26, 1876, Muscatine, Iowa. Entered the Institute in 1894; graduated in the Electrical Engineering Course in 1898. In 1899 graduate student in Civil Engineering at the Rose Polytechnic Institute. 1900 with the Indiana Southern Railway Company. From 1900 to 1903 with the Missouri Edison Company, St. Louis, Mo. From 1904 to 1906 with the Union Electric Light and Power Company, St. Louis, Mo. From 1906 to the present time Mechanical and Electrical Engineer Minas Tecolotes Anexas, Santa Barbara, Chihuahua, Mexico. Is a member of the Western Society of Engineers and the A. I. E. E. Was married in St. Charles, Mo., January 7, 1901.

234. STILZ, HARRY BALL. 1898.

Born in Louisville, Ky., February 9, 1876. Entered the Institute in September, 1894; graduated from the Electrical Engineering Course in 1898. After graduation was Foreman of Electric Welding Equipment used in Welding Street Car Tracks in Brooklyn, N. Y. From 1899-1900 was with William Cramp & Sons' Shipbuilding Company, Philadelphia. 1900-01 in Bureau of Construction and Repair Navy Department, Washington. From 1901-05 with the Naval Construction Department at Bath, Me., and Seattle, Wash. In summer of 1906 with Steam Turbine Department General Electric Company, Schenectady. Instructor of Mechanical Engineering University of Pennsylvania, 1906-07. Received degree of M.S. at Rose in 1902. Has been for some time engaged in the development of a type of internal combustion engine, and in this interest went to England in the winter of 1908. This type was partially described in the *ROSE TECHNIC*, October, 1905, and more fully discussed in the *Engineering News* lately.

235. THEOBALD, CHARLES EDWIN. 1898.

Born February 28, 1877, Archbold, Ohio. Entered the Institute in 1894, and graduated in the Electrical Engineering Course in

1898. From 1898 to the present time with New York Telephone Company as Engineer in the Plant Department. Is a member of the New York Electrical Society. Was married in New York October 17, 1903. He has been studying Wireless Telegraphy.

236. VOORHES, KIMBROUGH ENOCH. 1898.

Born December 28, 1875, Danville, Ill. Entered the Institute in 1894; graduated in the Electrical Engineering Course in 1898. In 1899 with the McKay Metallic Fastening Association, Winchester, Mass. From 1900 to 1901 in the Mechanical Engineering Department New York Ship Building Company, Camden, N. J. In 1904 with Henry R. Worthington, Harrison, N. J. In 1907 Mechanical Engineer for Champion Coated Paper Company, Sunburst, N. C. No further record of Mr. Voorhes has been received at the Institute.

237. WAMSLEY, CALE. 1898.

Born May 16, 1868, Terre Haute. Entered the Institute in 1894, and graduated in the Civil Engineering Course in 1898. From 1898 to 1900 Assistant Engineer, and from 1900 to 1901 Superintendent of Track Big Four Railway Company, Mattoon, Ill. In 1901 Assistant Engineer Great Northern Railway Company. From 1901 to 1902 Resident Engineer Oklahoma & Western Railway, Oklahoma City. From 1902 to 1904 Resident Engineer Texas & Oklahoma Railway, Shawnee. From 1904 to 1905 Assistant Engineer Big Four Railway Company, Mattoon, Ill. From 1905 to 1907 Maintenance of Way Inspector Missouri Pacific Railway, Kansas City, Mo. From 1907 to the present time Division Engineer Missouri Pacific Railway, Aurora, Mo. Was married December 27, 1899.

238. WHITTEN, FRANK ALLEN. 1898.

Born March 28, 1876. Entered the Institute from Sloan, Iowa, in 1894, and graduated in the Electrical Engineering Course in 1898. In 1898 Draftsman with the Buckeye Engine Company, Salem, Ohio. From 1899 to 1906 Engineer in Testing Department Henry R. Worthington's Works, New York City. From 1906 to the present time Engineer and Superintendent for the Lansden Automobile Company, Newark, N. J. Was granted degree of M.S. in 1902 from Rose. Married October 11, 1905, at South Berwick, Me.

239. WILEY, BRENT. 1898.

Born April 10, 1876, Paris, Ill. Entered the Institute in 1894; graduated in the Electrical Engineering Course in 1898. From 1898 to 1899 in the Electrical Department Ohio Steel Works, Youngstown, Ohio. From 1899 to 1904 in Electrical Department Homestead Steel Works, Munhall, Pa. From 1904 to 1906 Electrical Engineer Wellman-Seaver-Morgan Engineering Company, Cleveland, Ohio. From 1906 to the present time Commercial Engineer Westinghouse Electric Company, Pittsburgh, Pa. Is an associate member of the A. I. E. E. and member of the Engineers' Society Western Pennsylvania. Was granted degree of M.S. in 1902 from Rose, and was married October 1, 1908, at Paris, Ill.

240. BURT, NATHANIEL PRATT. 1899.

Born August 27, 1877, Leavenworth, Kan. Entered the Institute in 1895, and graduated in the Electrical Engineering Course in 1899. In 1899 was a graduate student in Chemistry at the Worcester Polytechnic Institute, Worcester, Mass. From 1900 to the present time is Foreman for the Great Western Stove Company, Leavenworth, Kan.

241. BUTLER, NOBLE CHARLES, JR. 1899.

Born July 27, 1874. Entered the Institute from Indianapolis in 1895, and graduated in the Mechanical Engineering Course in 1899. From 1900 to 1906 with the Henry R. Worthington's Hydraulic Works, Brooklyn, N. Y. From 1906 to the present time with the same company at Harrison, New Jersey.

242. CREBS, WALTER DAVID. 1899.

Born June 3, 1877, Dayton, Ohio. Entered the Institute in 1895; graduated in the Mechanical Engineering Course in 1899. From 1899 to 1901 with the Thresher Electric Company, Dayton, Ohio. From 1902 to the present time with the Beaver Soap Company, Dayton, Ohio, now as Superintendent. Was married November 6, 1902.

243. DAVIS, WILLIAM GRIFFITH. 1899.

Born October 22, 1875, Washington, D. C. Entered the Institute in 1895; graduated in the Electrical Engineering Course in 1899. From time of graduation until January, 1903, with the General Electric Company at Schenectady, N. Y., in the Test-

ing, Construction, Drafting, and Engineering Departments. From October, 1903, until July, 1905, with the Electric Storage Battery Company, Philadelphia, Pa. From July, 1905, to May, 1906, with Charles L. Seeger, Mexico City, Mex. From 1907 to the present time with the Westinghouse Machine Company, New York City, N. Y., as their Storage Battery Representative in the East.

244. EDWARDS, EDMUND PERKINS. 1899.

Born in Louisville, Ky., January 12, 1877. Entered the Institute in 1895, and graduated in June, 1899, from the Electrical Engineering Course. Immediately after graduation was with the Ohio Steel Company at Youngstown, Ohio, in the Electrical Department. In November, 1899, entered the service of the General Electric Company at Schenectady, N. Y., where he has remained to date. After completing his apprentice course entered into the executive and commercial part, specializing along the line of switchboard appliances, especially for the United States Government in connection with the coast and interior defenses. Later on was transferred to the Lighting Department, of which he has entire commercial charge. He has also been interested in wireless telegraphy and appliances for same.

245. FROELICH, FREDERICK HERMAN. 1899.

Born May 6, 1875, Toledo, Ohio. Entered the Institute in 1895, and graduated in the Electrical Engineering Course in 1899. From 1899 to 1902 with the Edward Ford Plate Glass Company, Toledo, Ohio. In 1903 Electrical Engineer Toledo & Western Railroad Company, Sylvania, Ohio. 1904 Electrical Engineer Patrick Hirsch Company, Toledo. In 1905 Electrical Engineer Toledo & Western Railway, Sylvania, O. In 1906 Electrical and Mechanical Engineer Toledo, Ann Arbor & Detroit Railway, Toledo, O. From 1907 to the present time Consulting Electrical and Mechanical Engineer, Toledo, Ohio. Member A. I. E. E. Married, 1902, Terre Haute.

246. HOLLIGER, JESSE ELMER. 1899.

Entered the Institute from Terre Haute, age 19, in 1895, and graduated in the Electrical Engineering Course in 1899. In 1899 with the Kester Electric Company, Terre Haute. 1900 Draftsman in the Vandalia Shops, Terre Haute. In 1901

Draftsman for the Baldwin Locomotive Company, Philadelphia, Pa., and later Draftsman in the office of the Chief of Engineers United States Army. From 1902 to 1905 Assistant Examiner Patent Office, Washington, D. C., and from 1906 to the present time Examiner in the Patent Office. Was granted degree of LL.B. from the National University and degree of M.P.L. from the George Washington University, the first in 1904 and the second in 1905.

247. HOWELL, CECIL A. 1899.

Born October 4, 1876, Mt. Sterling, Ky. Entered the Institute in 1895, and graduated in the Electrical Engineering Course in 1899. In 1900 in the Testing Department General Electric Company, Schenectady, N. Y. 1901 Assistant Engineer Wagner Electric Company, St. Louis, Mo. In 1902 doing experimental work in Wireless Telegraphy for the Texas Midland Railway at Terrell, Texas, and with the Bullock Company, Cincinnati, Ohio. From September, 1902, to 1906 Engineer in charge of Transformer Department Wagner Electric Company, St. Louis, Mo. From 1906 to date Foreman of the Testing Department Edison Electric Company, Los Angeles, Cal. Mr. Howell was married March 24, 1905.

248. JUMPER, FRANK JACOB. 1899.

Born August 1, 1877, Terre Haute. Entered the Institute in 1895, and graduated in the Electrical Engineering Course in 1899. In 1900 was with the American Car and Foundry Company, Terre Haute. In 1901 Assistant Master Mechanic of the Pressed Steel Car Company, McKee's Rock, Pa., and in July of that year was made Civil Engineer for the company at Allegheny, Pa. In 1902 Civil Engineer for the Standard Steel Car Works, Butler, Pa. From 1904 to 1906 Chief Draftsman in Mechanical Department and Civil Engineer for the Standard Steel Car Company, Butler, Pa. From 1906 to the present time Assistant Mechanical Engineer Union Pacific Railway, Omaha, Neb. Mr. Jumper was married in Vincennes, Ind., October 1, 1901.

249. KEYES, CLIFT BUTTON. 1899.

Born August 24, 1877, at Crown Point, New York. Entered the Institute in 1895; graduated in the Electrical Engineering Course in 1899. Since graduation has held various positions

with the General Electric Company, and now represents the Railway and Traction Engineering Department in their New York office. Is a member of the A. I. E. E. and the American Street and Interurban Railway Association. Was married June 16, 1904, at Fitchburg, Mass. Was connected with the Electrification of the New York Central Railway in New York City and the West Jersey & Seashore Railway.

250. KIDDER, ARTHUR DALE. 1899.

Born March 26, 1876, Terre Haute. Entered the Institute in 1895; graduated in the Civil Engineering Course in 1899. In 1900 was Superintendent Blue Bell Mining Company, Webb City, Mo. In 1901 was in General Land Office, Washington, D. C. In March, 1901, took examination for Examiner of Surveys, and made first grade. Received appointment in April as Examiner of Surveys, and since that time has been in active service, and has done much valuable work for the Government. Was granted the degree of M.S. in 1901 from Columbian University. Was married in Terre Haute March 31, 1904.

251. KITTREDGE, HARVEY GAYLORD. 1899.

Born April 6, 1878, Dayton, Ohio. Entered the Institute in 1895, and graduated in Chemistry in 1889. From time of graduation to the present has been Secretary and Treasurer of the Kay & Ess Company, Dayton, Ohio. Is also a Director of The Rice Electric Display Company. Is a member of the American Chemical Society, Society of Chemical Industry, the A. A. A. S., and the American Society for Testing Materials. His important work has been the manufacture of paint and varnish.

252. LIKERT, GEORGE HERBERT. 1899.

Born October 3, 1874, Terre Haute. Entered the Institute in 1894, and graduated in the Electrical Engineering Course in 1899. From 1898 to 1903 in the Union Pacific Shops, North Platte, Neb. From 1903 to 1906 Assistant Master Mechanic Wyoming Division U. P. Railroad Company, Cheyenne, Wyo. From 1906 to 1907 Master Mechanic of the Colorado Division at Denver. From 1907 to date Assistant Superintendent of the Nebraska Division Union Pacific Railroad Company, Omaha, Neb. Is a member of the Master Mechanics' and Master Car Builders' Association and Western Railway Club. Mr. Likert was married October 15, 1902.

253. McLELLAN, JAMES J. 1899.

Born December 25, 1872, Louisville, Ky. Entered the Institute in 1895; graduated in the Electrical Engineering Course in 1899. In 1899 Master Telephone Exchange, Salem, Ind. 1900 to 1902 Superintendent of Mills American Zinc, Lead and Smelting Company, Webb City, Mo. From 1902 to 1906 Instructor in Physics Manual Training High School, Louisville, Ky. From 1906 to the present time Superintendent of Mines, Webb City, Mo. His special work is designing and erecting concentrating plants for zinc and lead ores. Mr. McLellan is a member of the Engineers' and Architects' Club of Louisville and the Engineering Society of Southwest Missouri, Joplin, Mo. Was married December 25, 1902.

254. PLATTS, JOHN MILTON. 1899.

Born July 30, 1873, at Buchanan, Mich. Entered the Institute in 1894; graduated in the Electrical Engineering Course in 1899. Was with the Fairbanks-Morse Company in Beloit, Wis., for a few months, and then with the Western Electric Company until the spring of 1908, when, on account of poor health, resigned his position and went to live at Klamath Falls, Oregon, where he is engaged in mercantile business.

255. SCHWABLE, HENRY CONRAD. 1899.

Born March 26, 1878, Greenville, Ohio. Entered the Institute in 1895; graduated in the Electrical Engineering Course in 1899. In 1900 with the Electric Appliance Company, Chicago. In 1901 Sales Manager Electric Supply and Manufacturing Company, Cleveland. From 1901-04 with the Ohio Brass Company, Mansfield. In 1904 Secretary of the Pittsburg Stoker and Manufacturing Company, Pittsburg, Pa. From 1906 to the present time with Stephen T. Williams & Staff, New York City. His special work is along organization.

256. SCHWED, JOHN FRANK. 1899.

Born July 31, 1875, at Cleveland, Ohio. Entered the Institute in 1895; graduated in 1899. In 1900 was with the Chicago & Northwestern Railway at Council Bluffs, Iowa. From 1901-07 in Engineering Department Southern Railway at Birmingham, Ala., and Knoxville, Tenn. In 1907 in Construction Department Lake Shore & Michigan Southern Railway, Franklin, Pa., and from 1898 to the present time with the same company at Cleveland, Ohio. Was married at Cleveland February 5, 1902.

257. SMYTH, CUBITT BEVERLY. 1899.

Born December 10, 1873, Hamilton, Canada. Entered the Institute from Winnipeg, Canada, in 1895, and graduated in the Mechanical Engineering Course in 1899. In 1899 was Draftsman for the Colorado Iron Works, Denver, and Millwright Colorado Iron Works. From 1900-08 with the Union Pacific Railroad Company as Machinist and Erecting Foreman, North Platte; Erecting Foreman, Cheyenne; Round House Foreman, Laramie; Erecting Foreman, Omaha; District Foreman, Sidney, Neb., and Assistant Mechanical Engineer, Omaha. From 1908 to the present time Superintendent McKeen Motor Car Company, Omaha. Is a member of the Western Railway Club and the Omaha Railway Club. Was married in Denver March, 1903.

258. STONE, ARTHUR PRENTICE. 1899.

Born April 2, 1877, Terre Haute. Entered the Institute in 1895, and graduated in the Civil Engineering Course in 1899. In 1899 was with the Wheeling Corrugating Company, Wheeling. In 1900 with the Brown Hoisting and Conveying Company, Cleveland. Also with the Forest City Steel and Iron Company, Cleveland. In 1901 Draftsman with the Webster, Camp & Lane Machine Company, Akron, Ohio. 1902 Assistant Engineer Maintenance of Way St. Louis Division Big Four Railroad, Mattoon, Ill. From 1903 to 1904 Draftsman with Heyl & Patterson Company, Pittsburg. 1905 with the Big Four Railroad Company, Cleveland, Ohio. In 1906 with the Big Four Railroad Company, Mattoon, Ill. 1907 with the Missouri Pacific Railroad, Tallulah, Fla. From 1908 to the present time with the Big Four Railroad as Civil Engineer, Terre Haute, Ind.

259. THOMPSON, ARTHUR C. 1899.

Born November 15, 1870, Terre Haute. Entered the Institute in 1895; graduated in the Electrical Engineering Course in 1899. From 1900 to the present time with the Ridgeway Dynamo and Engine Works, Ridgeway, Pa.

260. TRUMBO, CHARLES FRANKLIN. 1899.

Born January 9, 1877, Mt. Sterling, Ky. Entered the Institute in 1895, and graduated in the Electrical Engineering Course in 1899. From 1900 to 1901 Engineer with the Blue Bell Mining Company, Webb City, Mo. In 1901 with the General Electric

Company, Schenectady, N. Y. In 1906 with F. O. Blackwell, Consulting Engineer, New York. No further record of Mr. Trumbo has been received at the Institute.

261. APPLETON, WILLIAM COURTNEY. 1900.

Born February 24, 1876. Entered the Institute from Dayton, Ohio, in 1896, and graduated in the Electrical Engineering Course in 1900. From 1900 to 1903 with the General Electric Company, Schenectady, N. Y. From 1903 to 1905 with the same company, Atlanta, Ga. From 1905 to the present time with the Crocker-Wheeler Company, Ampere, N. J. Mr. Appleton was married June 22, 1904, at Charleston, S. C. Member of A. I. E. E.

262. BREWER, JESSE IRVING. 1900.

Born March 7, 1880, Terre Haute. Entered the Institute in 1896, and graduated in the Mechanical Engineering Course in 1900. From 1900 to 1901 Instructor in Department of Engineering Swarthmore College, Swarthmore, Pa. From 1901 to 1902 Draftsman in office Mechanical Engineer Pennsylvania Railroad, Altoona, Pa. In 1903 Assistant Engine House Foreman New York Central & Hudson River Railway at Albany, and later in New York City. From April, 1903, to the present time with the Interborough Rapid Transit Company as Draftsman, and July 1, 1905, was made Assistant Engineer for the company. Was granted degree of M.S. in 1902 and degree of M.E. in 1904 and degree of C.E. in 1907, all from Rose.

263. INSLEY, WILLIAM HENRY. 1900.

Born January 16, 1870, in Terre Haute. Entered the Institute in 1895; withdrew for one year; graduated in 1900 in the Architectural Course. In 1901 was Structural Draftsman for Brown-Ketcham Iron Works, Indianapolis, and 1902-05 Structural Draftsman and Estimator for Haugh-Noelke Company, Indianapolis. From 1905 to the present time President of the Insley Iron Works, Indianapolis. In 1908 company was reorganized and name changed to Insley Manufacturing Company. Member I. E. S. Married in 1903 at Corning, N. Y.

264. KIDDER, SIDNEY JESSE. 1900.

Born June 3, 1878, in Terre Haute. Entered the Institute in 1896, and graduated in the Civil Engineering Course in 1900.

In 1900 visited the mining districts in Arizona, New Mexico, and British Columbia. From 1901 to 1902 with the Pittsburg Testing Laboratory, Chicago, Ill. From 1903 to 1904 graduate student School of Mines, Columbia University. From 1904 to 1906 Mining Engineer with Bamberger-DeLamar Gold Mines Company, DeLamar, Nev. From 1906 to the present time with the Tonopah Mining Company, Desert Mill, Millers, Nev. Mr. Kidder was granted degree of E.M. in 1904 from the Columbia University.

265. LARSON, CHARLES JOHN. 1900.

Born March 2, 1872, at Lake Park, Minn. Entered the Institute in 1896, and graduated in the Mechanical Engineering Course in 1900. From 1900 to 1905 was Erecting Engineer for the Allis-Chalmers Company, Milwaukee, Wis. From 1905 to 1907 District Superintendent, New York Territory, for the Allis-Chalmers Company. From 1908 to the present time Chief Engineer Union Electric Company, Dubuque, Iowa. Is a member of the A. S. M. E. and the A. I. E. E. Was in charge of the building of the power stations for the Milwaukee Electric Railway, the New Orleans Railway Company, the St. Louis Exposition, the New York Subway, Washington, D. C., Drainage Station, Washington Water Works, the Boston Sewerage Station, and the New York High Pressure Fire Service. Mr. Larson was married in Chicago, 1902.

266. LESER, HENRY. 1900.

Born June 10, 1878, in Indianapolis. Entered the Institute in 1896; graduated in the Civil Engineering Course in 1900. From 1901 to 1903 Assistant on Engineering Corps in Maintenance of Way Department of the Pittsburg Division of the Pittsburg, Cincinnati, Chicago & St. Louis Railway. In 1905 was Assistant in Engineering Department of the Louisville Division, P., C., C. & St. L. Ry., Louisville. In 1906 in Engineering Department of the Interborough Rapid Transit Company, New York City, and in July, 1907, was appointed Assistant Engineer of the Interborough Rapid Transit Company, New York City, N. Y. In June, 1908, was married in New York City.

267. LOOFBOUROW, JESSE HEALY. 1900.

Born November 12, 1875, in Salt Lake City, Utah. Entered the Institute in 1896; graduated in the Civil Engineering Course in 1900. In 1901 was in office of Engineer Maintenance of Way

Pittsburg Division Pennsylvania Lines west of Pittsburg, Pittsburg, Pa. No further report has been received at the Institute from Mr. Loofbourow.

268. MADISON, HERBERT FREDERICK. 1900.

Entered the Institute in 1896, age 23; graduated in Chemistry in 1900. Was Assistant Chemist Cambria Steel Company, Johnstown, Pa. Then Assistant Chemist, Ohio Works, U. S. Steel Company, Youngstown, O. Then Chief Chemist Salem Iron Company, Leetonia, O. In 1906 returned to Youngstown as Consulting Chemist and Estimator of Costs for the Youngstown Foundry and Machine Company. Remained with this company until 1908, when, on account of his health, was compelled to go to California, where he lived on a ranch until 1909, when he acted as Librarian of the Clovis Public Library. Was married May 5, 1904, at Youngstown, O.

269. MAIER, GUSTAVE ADOLPH. 1900.

Born February 5, 1878, in Danville, Ill. Entered the Institute in 1896, and graduated in the Electrical Engineering Course in 1900. From July, 1900, to August, 1901, with the General Electric Company, Schenectady, N. Y. From August, 1901, to September, 1902, with the Milwaukee Electric Company, Milwaukee, Wis. From October, 1902, to February, 1904, in Testing Department; from February, 1904, to June, 1906, in Induction Motor Department, and from June, 1906, with the Power and Engineering Department General Electric Company, Schenectady, N. Y. Mr. Maier is a member of the Schenectady branch of the A. I. E. E., and was married April 8, 1908.

270. MEES, CURTIS ADOLPH. 1900.

Born September 16, 1877, in Woodville, O. Entered the Rose Polytechnic Institute in 1896; graduated in the Civil Engineering Course in 1900. From 1901 to 1902 with Engineering Corps of the E. & A. Division of the Pennsylvania Lines west of Pittsburg. In 1902 with Chief Engineer of the New York Central & Hudson River Railway, New York City. From 1902 to 1904 Assistant Engineer of the Catawba Power Company, Rock Hill, S. C. In 1904 Assistant City Engineer Columbus, O. Since April, 1905, Designing Engineer Southern Power Company, Charlotte, N. C. Was granted the degree of C.E. in 1908 from Rose. Is a member of the A. S. C. E. Association, A. S. M. E.

Association, A. I. E. E., and member Eng. Asso. of the South. His work has been mainly along the lines of hydro-electric power plants and high-tension transmission.

271. MERIWETHER, DAVID, JR. 1900.

Born February 27, 1879, in Louisville, Ky. Entered the Institute in 1896; graduated in the Civil Engineering Course in 1900. From June, 1900, to March, 1901, with the Engineering Corps of the Pennsylvania Lines west of Pittsburg at Cincinnati, O. From March, 1901, to October, 1902, in Construction Department of the Southern Railway, Louisville, Ky. From October, 1902, to June, 1905, Assistant Engineer with the Southern Railway, and from that time to the present is Assistant Engineer, Construction Department, Southern Railway Company, Knoxville, Tenn. Mr. Meriwether does not report whether he continues to play football.

272. PHILLIPS, EDWARD FRAZIER. 1900.

Entered the Institute from Danville, Ill., in 1892; withdrew in 1893; returned in 1896, and graduated in Chemistry in 1900. From 1901 to 1904 Draftsman with the Brown-Ketcham Iron Works, Indianapolis, Ind. From 1904 to 1906 Assistant Cashier First National Bank, Artesia, N. M. In 1907 Cashier Joyce-Pruit Company, Artesia, N. M. From 1908 to the present time Cashier of the First National Bank, Artesia, N. M. Was married October 8, 1902, in Terre Haute, Ind.

273. RICHARDSON, HARRY STEELE. 1900.

Born August 6, 1878, in Terre Haute. Entered the Institute in 1896; graduated in the Electrical Engineering Course in 1900. From 1901 to 1903 Draftsman in Ordnance Office, War Department, Washington, D. C. From 1903 to 1904 with the Long Arm System Company, Mechanical and Electrical Ship Outfitters, Cleveland, O. From 1904 to 1905 with the Electric Controller and Supply Company, Cleveland, O. From 1905 to the present time Chief Draftsman of the Electric Controller and Supply Company, Cleveland, O. Was granted the degree of M.S. in 1902 from Rose, and was married in Washington, D. C., in April, 1904. In 1901, when Mr. Richardson took the Civil Service examination for the position in the Ordnance Department, only two out of thirty candidates passed, he being one. While in the Ordnance Department his chief work was on disappearing gun carriages.

274. WITHERSPOON, THOMAS DWIGHT, JR. 1900.

Born December 25, 1874, in Louisville, Ky. Entered the Institute in 1896; graduated in the Electrical Engineering Course in 1900. From 1900 to 1901 in Testing Department of the National Malleable Castings Company, Chicago. From 1901 to 1902 in Superintendent's Office of the Vandalia Railway, Terre Haute. From 1902 to 1903 Draftsman Youngstown Engineering Company, Youngstown, O. From 1903 to 1907 Electrical Engineer and Assistant Master Mechanic Toledo Furnace Company, Toledo. In 1908 Consulting Engineer Magnolia Land and Lumber Company, Magnolia, N. C. In 1909 Draftsman Union Electric Light and Power Company, St. Louis, Mo. Is an Associate member of the A. I. E. E. Was married December 8, 1903, in Chicago, Ill. Mr. Witherspoon was Editor of *The Technic* and active in the organization of the Students' Council.

275. YORK, ROBERT. 1900.

Born October 24, 1879, in Pine Bluff, Ark. Entered the Institute in 1896; graduated in the Electrical Engineering Course in 1900. From June, 1900, to March, 1901, Master Mechanic and Assistant Manager of the Bluff City Lumber Company, Clio, Ark. From March to July, 1901, in charge of construction of power house for the Citizens' Light and Transit Company, Pine Bluff, Ark. From 1901 to 1903 Manager Bluff City Lumber Company, Kearney, Ark. From 1903 to 1904 Superintendent Citizens' Light and Transit Company, Pine Bluff, Ark. From 1905 to 1907 with the Citizens' Light and Transit Company, Pine Bluff. From 1908 to date Vice-President of the York-Browning Lumber Company, Memphis, Tenn., the Grant Lumber Company and the Burt Lumber Company, Rison, Ark. Was granted the degree of M.S. in 1902 from Rose. Is an associate member of the American Society of Mechanical Engineers.

276. CLAY, GEORGE HARRY. 1901.

Entered the Institute from Terre Haute, Ind., in 1897, age 18; graduated in Chemistry in 1901. From June 1, 1901, to 1902, Assistant Chemist Allegheny Steel and Iron Company, Tarentum, Pa. From 1902 to 1903 Assistant Chemist Procter & Gamble Company, Ivorydale, O. In 1904 Superintendent Glycerine Department Procter & Gamble Company, Ivorydale, O. From November 1, 1904, to August, 1908, Chemist Procter & Gamble Company, Kansas City, Mo., and since August, 1908, in

charge of the Packing Department, Kansas City, Kan. Is a member of the A. C. S. Was married in March, 1906.

277. CRAWFORD, GILBERT. 1901.

Entered the Institute from Paola, Kan., in 1897, age 21; graduated in Chemistry in 1901. From July, 1901, to June, 1902, with the Fairbanks-Morse Company, Beloit, Wis. From June, 1902, to 1903, Assayer in American Smelting and Refining Company, Pueblo, Col. From 1904 to 1906 Head Assayer and Chemist Montezuma Lead Company, Santa Barbara, Chihuahua, Mexico. In 1907 Assayer and Chemist American Smelting and Refining Company, Monterey, Mexico. At present Mr. Crawford is at his home in Paola, Kan.

278. GIBBONS, WALTER RAY. 1901.

Born January 31, 1879, in Indianapolis. Entered the Institute in 1897, and graduated in the Civil Engineering Course in 1901. In 1901 graduate student and Assistant in Civil Engineering at Rose Polytechnic Institute. From 1902 to 1905 with the Waddell & Hedrick Company, Kansas City, Mo., as Assistant Engineer Omaha and Resident Engineer Bayou Sara, La. From 1905 to the present time Assistant Engineer of the Big Four Railway at Cincinnati, O. Was married in Terre Haute, Ind., August 4, 1904.

279. HADLEY, WILLIAM. 1901.

Entered the Institute from Hadley, Ind., in 1897, age 19; graduated in the Electrical Engineering Course in 1901. In 1901 in the Electrical Department of the Homestead Steel Works, Muncie, Pa. Continued in this position until April, 1903. From April, 1903, to February, 1904, with the Wilmington Malleable Iron Works, Wilmington, Del. In 1904 Superintendent Electrical and Mechanical Department Malleable Iron Works, Wilmington. In 1905 with the E. I. DuPont Company, Wilmington, Del. In 1906 Assistant Engineer Eastern Dynamite Company, Barksdale, Wis. From 1907 to the present time with the Electrical and Mechanical Departments Isthmian Canal Commission, Culebra, Canal Zone.

280. HAMMEL, MAX JACOB. 1901.

Entered the Institute from Appleton, Wis., in 1897, at the age of 18; graduated in the Electrical Engineering Course in 1901.

From the fall of 1901 to the fall of 1904 with the Milwaukee Electric Railway and Light Company, and since that time to date with A. Herz, Terre Haute. Mr. Hammel was married in Terre Haute April 27, 1905.

281. HELMER, LESLIE L. 1901.

Born November 11, 1877, in Terre Haute. Entered the Institute in 1896; withdrew on account of defective vision; reentered in 1898, and graduated in Chemistry in 1901. After graduation was in the Chemical Laboratory of the Pittsburg Testing Laboratory until January, 1902. Then in the Chemical Department of the N. & G. Taylor Company, at Cumberland, Md. In May, 1902, was transferred to the Blackplate Department of the same company as Assistant Superintendent. In March, 1903, became Superintendent of the company, and in 1906 was made General Manager, which position he holds to date. Was married June, 1907, in Cumberland, Md.

282. KING, EVERETT EDGAR. 1901.

Entered the Institute from Warren, Ind., in 1899, at the age of 22, and graduated in the Civil Engineering Course in 1901. From June, 1901, to December, 1902, Assistant Engineer Central Railway, Mexico. December, 1902, to 1903, Assistant Engineer Vandalia Railway. From September, 1903, to 1904, Assistant Engineer on C., R. I. & P. Ry., Chicago. October, 1905, Division Engineer Pacific & Idaho Northern Railway, Weiser, Ida. In 1906 Assistant Superintendent with the Chicago, Rock Island & Pacific Railway, St. Louis, Mo. In 1907 Resident Engineer C., R. I. & P. Ry., El Reno, Okla. In 1908 Associate Professor of Civil Engineering at A. and M. College, Stillwater, Okla., which position he holds to date. Is associate member A. S. C. E. and member Okla. Eng. Society. Was married October 3, 1903.

283. LYONS, ALBERT CARLETON. 1901.

Born November 2, 1875, Terre Haute. Entered the Institute in 1897; graduated in the Chemical Department in 1901. From June, 1901, to November, 1901, Assistant Chemist, Carnegie Steel Works, Duquesne, Pa. From November, 1901, to August, 1903, Assistant Superintendent Chiapas Mining Company, Chiapas, Mexico. From 1903 to 1904 Instructor in Chemical Laboratory, University of Missouri, Columbia, Mo. From 1904 to 1907 of the firm of Burk & Lyons, Analytic and Consulting Chem-

ists, Louisville, Ky. From 1907 to date Vice-President and Manager Kansas City Testing Laboratory, Kansas City, Mo. Granted degree of B.S. from Rose. Is a member of the A. C. S. and the Kansas City Technological Society for Testing. Was married June 25, 1905, at Columbia, Mo. Gave special attention to study of Portland cement and waterproofing of concrete mixtures.

284. MILLER, ROBERT NETHERLAND. 1901.

Born September 12, 1879, Louisville, Ky. Entered the Institute in 1897, and graduated in the Chemical Course in 1901. In 1901 and 1902 Assistant Professor of Chemistry and English in the Male High School, Louisville, Ky. From 1903 to 1906 student at Harvard Law School, Cambridge, Mass., and with Legal Aid Society, New York City. Since 1906 Practicing Law in Louisville as Attorney and Counsellor at Law. Was granted degree of LL.B. at Harvard in 1906. Member of the Engineers' and Architects' Club, Louisville, Ky.

285. PERKINS, HUGH ESPEY. 1901.

Entered the Institute from Rising Sun, Ind., in 1897, at the age of 22; graduated in the Civil Engineering Course in 1901. From June, 1901, to 1902 with the Metropolitan Elevated Railway Company, Chicago. In 1902 with Engineer Maintenance of Way Terre Haute & Logansport Railway, Logansport, Ind. From 1902 to 1903 with the Northwestern Elevated Railway Company, Chicago. In 1904 Assistant Engineer of the Northwestern Railway Company, Chicago. In 1905 and 1906 Assistant Engineer with the Chicago & Oak Park Elevated and Northwestern Elevated Railroads, Chicago. From 1907 to date Assistant Engineer Northwestern Elevated Railroad, Chicago.

286. PFLEGING, FRANK WILLIAM. 1901.

Entered the Institute from Terre Haute, Ind., in 1896, at the age of 20, and graduated in the Electrical Engineering Course in 1901. In 1901 Signal Inspector Union Pacific Railway, Omaha, Neb. From March, 1903, Signal Foreman Union Pacific Railway, Omaha, Neb. From 1904 Supervisor of Signals Colorado and Wyoming Division, Cheyenne, Wyo. At present is Supervisor of Signals of the Union Pacific Railroad at Cheyenne, Wyo.

287. PIPER, HARRY D. 1901.

Born January 22, 1879, Paris, Ill. Entered the Institute in 1897, at the age of 19, and graduated in the Mechanical Engineering Course in 1901. In 1901 was with the Fairbanks-Morse Company, Beloit, Wis. From 1902 to 1906 in the Engineering Department of the Ewart Manufacturing Company, Indianapolis. From 1906 to the present time is Chief Engineer Ewart Works, Link Belt Company, Indianapolis, Ind. Was married June 18, 1905.

288. RIGGS, JAMES ROBERT. 1901.

Entered the Institute in Junior Class from Erlanger, Ky., in 1899, at the age of 23, and graduated in the Electrical Engineering Course in 1901. In 1901 with the Link Belt Company, Indianapolis, Ind. In 1902 and 1903 in the Motive Power Department of the Vandalia Railroad, Terre Haute. 1904 and 1905 Assistant Engineer Vandalia Shops, Terre Haute. 1906 Assistant Engineer of Motive Power Vandalia Railroad, Terre Haute. From 1907 to the present time General Foreman Mechanical Department Michigan Division of the Vandalia Railroad, Logansport, Ind. Was married in Terre Haute, Ind., November 11, 1903.

289. ROCHESTER, ROBERT KENDALL. 1901.

Entered the Institute from Dayton, Ohio, in 1897, at the age of 17, and graduated in the Civil Engineering Course in 1901. In 1901 was with the American Car and Foundry Company, Detroit, Mich. In 1902 Assistant Engineer Maintenance of Way L. & T. and T. H. & L. Railways, Logansport, Ind. In 1903 Engineer Maintenance of Way L. & T. and T. H. & L. Railways, Logansport, Ind. 1905 Engineer Maintenance of Way Michigan Division Vandalia Railroad, Logansport, Ind. 1906 Principal Assistant Engineer Vandalia Railroad, Indianapolis, Ind. From 1907 to the present time Principal Assistant Engineer Vandalia Railroad, St. Louis, Mo. Has had charge of track elevation in Indianapolis.

290. SCHWARTZ, HARRY ADOLPH. 1901.

Entered the Institute from Louisville, Ky., in 1897, at the age of 17, and graduated in the Electrical Engineering Course in 1901. From June to September in Power Plant Louisville Railway Company. From September, 1901, to June, 1902, was Instructor in Drawing Rose Polytechnic Institute. From June,

1902, to date with the National Malleable Castings Company, Indianapolis, Ind. Was granted degree of M.S. in 1903 and degree of M.E. in 1905, both from Rose. Member of the A. C. S., the S. for T. M., the A. F. A., junior member A. S. M. E.

291. TROLL, MARTIN NEAL. 1901.

Entered the Institute from Kansas, Ill., in 1897, at the age of 18; graduated in the Electrical Engineering Course in 1901. From 1901 to 1905 with the National Malleable Castings Company, Indianapolis, Ind. In 1906 with the National Malleable Castings Company, Chicago. In 1907 Superintendent Solvay Foundry Company, Solvay, New York. From 1908 to date Electrical Engineer, Seattle, Wash.

292. WARFEL, ROB ROY. 1901.

Entered the Institute from Monticello, Ind., in 1896, at the age of 20; graduated in the Chemical Course in 1901. In 1901 with the Homestead Steel Works. In 1902 with the Allegheny Steel and Iron Works, Avenue, Pa. 1902 and 1903 Chemist Allegheny Steel and Iron Works, Brackenridge, Pa. From 1904 to 1907 Chemist Babcock & Wilcox Boiler Company, Bayonne, N. J. From 1907 to date Chemist, Seattle, Wash.

293. COX, CLAUDE ERNEST. 1902.

Born April 10, 1879, Libertyville, Ind. Entered the Institute in 1898; graduated in the Mechanical Engineering Course in 1902. From the time of graduating to 1905 with the Standard Wheel Company, Terre Haute, Ind., as Traveling Salesman, Draftsman, Superintendent of the Automobile Department, and Manager of the Automobile Department. From 1905 to 1906 Manager of the Automobile Department of the Standard Wheel Company at Indianapolis, Ind. From 1906 to 1908 General Manager and Treasurer of the Overland Automobile Company, Indianapolis, Ind. 1908 designing Interstate Car and planning the Interstate factory and equipment. From November, 1908, to date Engineer and Assistant Manager Interstate Company at Muncie, Ind. Was granted degree of M.S. in 1904 and the degree of M.E. in 1906, both from Rose. Is a member of the A. S. M. E. and Society of Automobile Engineers. Some of his more important work has been the designing and building of the Overland Car and the Interstate Car and the building and equipping the Interstate and Overland factories.

294. DICKERSON, JOHN THOMAS. 1902.

Entered the Institute from Atlantic, Iowa, in 1897, at the age of 17; withdrew in 1899 to work in engineering office, Chicago; reentered in 1900; graduated in the Civil Engineering Course in 1902. After graduation in 1902 was with the Chicago, Burlington & Quincy Railroad Company, Chicago. In 1903 Assistant Engineer of Bridges C. B. & Q. Railroad Company, Chicago. From April 4, 1903, Assistant Engineer of Bridges with the Chicago, Rock Island & Pacific Railroad, Chicago. In 1904 with Kohen Iron Works, American Bridge Company, St. Louis, Mo. From 1904 to date Assistant Engineer Scherzer Rolling Lift Bridge Company, Chicago, Ill.

295. FISHBACK, FREDERICK R. 1902.

Entered the Institute from Terre Haute in 1898, at the age of 18, and graduated in the Electrical Engineering Course in 1902. From graduation until September, 1903, with the Union Pacific Railway, Cheyenne, Wyo. In 1903 in the shops of the Chicago & Eastern Illinois Railroad at St. Elmo, Ill. In 1904 Round House Foreman of Shops of the Frisco System, Cape Girardeau, Mo. From 1905 to 1907 Draftsman with the Electric Controller and Supply Company at Cleveland, Ohio. From 1908 to the present time Manager of the New York office of the Electric Controller and Manufacturing Company, New York City. Married.

296. FLORY, EDGAR LEE. 1902.

Entered the Institute from Dayton, Ohio, in 1898, at the age of 24, and graduated in Chemistry in 1902. After graduating in 1902 with the G. H. Hammond Company, Hammond, Ind. In 1903 with the G. H. Hammond Company, St. Joseph, Mo. 1904 Chemist of the St. Joseph Plant of the Hammond Packing Company, St. Joseph, Mo. In 1905 Master Mechanic St. Joseph Plant of the Hammond Packing Company, St. Joseph. From 1905 to 1908 Master Mechanic G. H. Hammond Packing Company, Chicago, which position he holds to date. Married.

297. HILLS, CHARLES HERBERT. 1902.

Born August 20, 1880, Bernardston, Mass. Entered the Institute in 1898; graduated in the Electrical Engineering Course in 1902. From graduation until 1904 Chief Draftsman with the Federal Manufacturing Company, Indianapolis, Ind. From 1904

to 1908 in the Engineering Department of the Deane Steam Pump Company, Holyoke, Mass. From 1908 to the present time Special Representative International Steam Pump Company, Holyoke, Mass. Was married October 15, 1905, at Bernardston, Mass.

298. HOMMEL, VICTOR AUGUST. 1902.

Entered the Institute from Sandusky, Ohio, in 1898, at the age of 18, and graduated in the Architectural Course in 1902. From August, 1902, to 1903 with Brown Hoisting and Conveying Company, Cleveland, Ohio. In 1903 with Robert W. Hunt & Co., Chicago. In 1904 Vice-President M. Hommel Wine Company, Sandusky, Ohio. Died October 18, 1907, at Sandusky, Ohio.

299. HOUSUM, CHENOWETH. 1902.

Born November 25, 1879, Decatur, Ill. Entered the Institute in 1898; graduated in the Mechanical Engineering Course in 1902. From time of graduation until March, 1903, Draftsman Youngstown Engineering Company, Youngstown, Ohio. From March, 1903, to the fall of 1905 Draftsman with the William Tod Company, Youngstown, Ohio. From 1905 to the present time in charge of the Gas Engine Department of the William Tod Company, Youngstown, Ohio. Was granted degree of M.S. in 1906 from Rose. Is an associate member of the A. S. M. E. Mr. Housum's work has been mainly in engine and governor design. He published a work on Shaft and Fly Ball Governors, associated with Mr. Trinkham.

300. JONES, EDWARD LINDLEY. 1902.

Born June 11, 1880, Sanford, Fla. Entered the Institute from Decatur, Ill., in 1898, and graduated in the Civil Engineering Course in 1902. From June, 1902, to June, 1904, with the Roebbling Construction Company, Chicago, Ill. From 1904 to the present with Hoeffler & Co., Chicago, Ill., as Engineer and Designer, especially of reinforced concrete. Is a junior member of the Western Society of Engineers, and was married October 3, 1906, in Roanoke, Va.

301. JUMPER, CHARLES HENRY. 1902.

Entered the Institute from Terre Haute, Ind., in 1898, at the age of 18, and graduated in Chemistry in 1902. From 1902 to 1904

was Assistant Chemist with the Pennsylvania Railroad at Altoona, Pa. In 1905 with the Procter & Gamble Soap Company, Cincinnati, Ohio. In 1906 in the Testing Department of the Harriman System, Omaha, Neb. From 1906 to the present time with A. D. Little, Chemical Expert and Engineer, Boston, Mass. Was married in 1907.

302. MARSHALL, IRA. 1902.

Entered the Institute from Alma, Ill., in 1899, at the age of 24, and graduated in the Civil Engineering Course in 1902. From 1902 to 1903 with the Big Four Railway at Mattoon, Ill. From 1904 to 1907 Constructing Engineer with the Equitable Powder Manufacturing Company, East Alton, Ill. Since 1907 no report has been received at the Institute from him.

303. NICHOLSON, JOHN ALEXANDER. 1902.

Born January 28, 1879, Detroit, Mich. Entered the Institute from Terre Haute, Ind., in 1898; graduated in the Mechanical Engineering Course in 1902. From time of graduation to the present time with the Union Pacific Railway, and is now Foreman of the Motive Power and Machinery Department at Sidney, Neb. Was married February 6, 1907, at Washington, Kan.

304. OSBORNE, DON FINDLEY. 1902.

Entered the Institute from Cassopolis, Mich., in 1887, at the age of 20, and graduated in the Electrical Engineering Course in 1902. In 1902 with the Western Electric Company, Chicago, Ill. 1905 with the Frick Coke Company, Scottdale, Pa. 1906 with the Western Electric Company, Chicago. At present Superintendent of Dredging at San Pedro Harbor, Terminal, Cal.

305. PAIGE, ARTHUR JAMES. 1902.

Entered the Institute from Terre Haute in 1888, at the age of 16, and graduated in the Mechanical Engineering Course in 1902. From 1902 to 1908 Instructor in Drawing Rose Polytechnic Institute. From September, 1908, to date Superintendent and General Manager Fort Pitt Motor Manufacturing Company, New Kensington, Pa. Granted degree of M.S. in 1906 from Rose. Between 1902 and 1908 gave special attention to the study of gas engines. Designed and built a motor car, and has also been granted patents upon a rotary gas engine.

306. PARKS, COLEMAN CLYDE. 1902.

Born August 15, 1878, Sullivan, Ind. Entered the Institute from Terre Haute in 1898; graduated in the Electrical Engineering Course in 1902. From 1902 to 1903 with the General Electric Company, Schenectady, N. Y. 1903 with the Carnegie Steel Company, Munhall, Pa., where he remained until August, 1904, and then went with G. A. Taft, Consulting Engineer, Colorado Springs, Col. From 1905 to 1906 Electrical Engineer with G. A. Taft, Colorado Springs. In 1907-08 with the Stone & Webster Engineering Company, Terre Haute. Was married April 22, 1908, at Terre Haute.

307. POWELL, EDGAR BYER. 1902.

Entered the Institute from Newcastle, Ind., in 1898, at the age of 22, and graduated in the Architectural Course in 1902. From time of graduation to 1904 with Purdy & Henderson, Civil Engineers, New York City, N. Y. From May, 1904, to 1906 in Estimating Department of the American Bridge Company, New York City. In 1906 with D. H. Burnham & Co., Architects, Chicago. In 1907 Chief Engineer Insley Iron Works, Indianapolis, and in September, 1907, went with E. C. & R. M. Shankland, Chicago, Ill. Since that time no record has been received at the Institute.

308. UHL, HENRY WILLIAM. 1902.

Entered the Institute from Portsmouth, Ohio, in 1898, at the age of 20, and graduated in the Electrical Engineering Course in 1902. From 1902 to 1904 was in the shops of the Union Pacific Railroad Company at Cheyenne, Wyo. From 1904 to December, 1906, in shops of the Union Pacific Railroad Company at Omaha, Neb., as Mechanical Engineer, Head Inspector of Locomotives, and Engineer of Tests. In 1907 and 1908 General Foreman Union Pacific Shops, Kansas City, Kan. At present is Inspecting Engineer for Dr. Charles F. McKenna, New York City, N. Y. Was married October 5, 1907.

309. WARREN, ROBERT CHAUNCEY. 1902.

Born August 12, 1881, Terre Haute, Ind. Entered the Institute in 1898; graduated in Chemistry in 1902. From June, 1902, to August, 1903, Assistant Chemist Armour Packing Company, Kansas City, Mo. 1903 to April, 1904, Assistant City Chemist Kansas City, Mo. 1904 to 1906 Chemist American Cotton Oil

Company, at Memphis, Tenn., Chicago, and Atlanta, Ga. From 1906 Chemist Arkansas Cotton Oil Company. 1907 Chemist Arkansas Cotton Oil Company and State Chemist, Little Rock, Ark. Was married in Little Rock, Ark., June 3, 1908.

310. AGUILERA, FRANCIS VICENTE. 1903.

Entered the Institute from Manzanillo, Cuba, in 1901, age 20; graduated in the Electrical Engineering Course in 1903. From 1903 to 1905 with the General Electric Company, Schenectady, N. Y. 1906-08 Superintendent Electrical Plant, Manzanillo, Cuba. 1909 Manager Cuervo & Co., Engineers and Contractors, Havana, Cuba.

311. ARNOLD, ROBERT BACON. 1903.

Born February 17, 1881, Terre Haute. Entered the Institute in 1899; graduated in Chemistry in 1903. From June, 1903, to March, 1904, of the firm of Burk & Arnold, Chemists, Louisville, Ky. 1904 Assistant Chemist for the Kentucky Tobacco Product Company, Louisville, Ky. From 1905 to September, 1907, Chemist Richmond Branch Kentucky Tobacco Product Company, Richmond, Va. From September, 1907, to June, 1908, graduate student Massachusetts Institute of Technology. From June, 1908, to the present time Chemist in charge, Kentucky Tobacco Product Company, Richmond, Va. Is a member of the A. C. S. Mr. Arnold perfected a process for the extraction of nicotine from tobacco stems, protected by patent in the name of Lindenberger & Arnold.

312. AUSTIN, ALFRED NOEL. 1903.

Entered the Institute from Terre Haute in 1899, age 19, and graduated in the Architectural Course in 1903. In 1904 Draftsman Ornamental Iron Works, Denver Iron and Wire Works, Denver, Col. In 1905 Draftsman for Reisick Structural Iron Works, Allegheny, Pa. In 1906 Chief Draftsman Bollinger Bros. Structural Iron Works, Pittsburg. In 1907 Architect, and 1908 with the Federal Engineering Company, Pittsburg, Pa. At present with Foltz & Parker, Architects, Indianapolis, Ind.

313. BLAIR, MARION WORTHINGTON. 1903.

Entered the Institute from Terre Haute in 1899, age 21; graduated in the Mechanical Engineering Course in 1903. From graduation to April, 1905, Assistant Superintendent of the Terre

Haute Brick and Pipe Company, Terre Haute. From April, 1905, to October, 1905, First Assistant Mechanical Engineer Illinois Brick Company, Chicago. In 1906 with the Atlas Car and Manufacturing Company, Chicago. 1907 with the G. E. Luce Engineering Company, Chicago. Since January, 1908, Secretary of the United States Engineering Company, St. Louis, Mo. During the past year has erected plants for the Wabash Brick Company at Terre Haute, and the Twin City Brick Company, St. Paul, Minn. Was married December 26, 1908.

314. BOWIE, WALLACE DOUGLAS. 1903.

Born April 26, 1880, Sutersville, Pa. Entered the Institute from Gallup, New Mexico, in 1899; graduated in the Mechanical Engineering Course in 1903. From time of graduation to September, 1903, in the Union Pacific Railroad Shops, Omaha, Neb. From September, 1903, to January, 1904, Draftsman Steubenville Steel Works, Steubenville, Ohio. From March, 1904, to July, 1904, with the Southern Pacific Surveying Corps, Gallup, N. M. From 1904 to 1906 Transitman on Southern Pacific Railroad. From 1906 to the present time Superintendent Juanita Coal and Coke Company, Bowie, Delta County, Col.

315. BRAMAN, HARRY SCOTT. 1903.

Entered the Institute from Terre Haute in 1899, age 19; graduated in the Mechanical Engineering Course in 1903. From 1903 to 1905 with the Carnegie Steel Company in Furnace Department, Youngstown, Ohio. 1906 and 1907 Foreman in charge of Furnaces Carnegie Steel Company, Youngstown, Ohio. In 1907 Manager Alice Furnaces Youngstown Sheet and Tube Company, Sharpsville, Pa., and from 1908 General Superintendent of Blast Furnaces of the Youngstown Sheet and Tube Company, Youngstown, Ohio.

316. BROSIUS, JAMES SIMMS. 1903.

Entered the Institute from Terre Haute in 1899, age 16; graduated in the Electrical Engineering Course in 1903. From time of graduation to 1905 with the Westinghouse Electric and Manufacturing Company, Pittsburg. 1905 with the American Window Glass Company, Pittsburg. In 1906 with the Western Electric Company, Chicago, Ill. From 1907 to 1909 Draftsman for the Electric Controller and Manufacturing Company, Cleveland, Ohio, and is at present Draftsman for the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa.

317. BURT, EUGENE. 1903.

Entered the Institute from Leavenworth, Kan., in 1899, age 18; graduated in the Mechanical Engineering Course in 1903. From the time of graduation to the present time with the Great Western Stove Company, Leavenworth, Kan.

318. CHAMBERLAIN, CHARLES LEA. 1903.

Entered the Institute from St. Louis, Mo., in 1900, age 22; graduated in the Electrical Engineering Course in 1903. From 1903 to 1905 Draftsman with the St. Louis Transit Company, St. Louis, Mo. From 1905 to the present time with the Rescue Copper Company, Gila Bend, Arizona.

319. COX, IRVING JOHN. 1903.

Entered the Institute from Terre Haute in 1899, age 19; graduated in the Chemical Course in 1903. From 1903 to 1905 Assistant Chemist with the Armour Packing Company, Kansas City, Mo., and in 1906 Assistant Chemist Armour Packing Company, Chicago. In 1906 with the Eastern Dynamite Company, Gibbstown, N. J. From 1907 to the present time Chemist for the E. I. DuPont de Nemours Powder Company, Gibbstown, N. J. Was married January 1, 1907.

320. COX, NATHAN HADLEY. 1903.

Born May 21, 1881, Coloma, Ind. Entered the Institute from Terre Haute in 1899, age 18; graduated in the Mechanical Engineering Course in 1903. From July, 1903, to 1904 with the Wilmington Malleable Iron Company, Wilmington, Del. In 1905 with the General Electric Company in the Testing Department, Schenectady, N. Y. From 1906 to 1909 Assistant Superintendent Naugatuck Malleable Iron Company, Naugatuck, Conn. 1909 to date Superintendent of the Metal Finishing Company, Union City, Conn.

321. CUSHMAN, JOHN ARTHUR. 1903.

Entered the Institute from Springfield, Mass., in 1900, age 18; graduated in the Mechanical Engineering Course in 1903. In 1904 with the Allis-Chalmers Company arranging exhibits at the World's Fair, St. Louis, Mo. In 1905 Special Apprentice Allis-Chalmers Company, Milwaukee. 1906 with the Illinois Brick Company, Chicago. 1907 Engineer for Charles N. Hays, Power Appliances, Chicago. From 1907 to the present time with the Eagle Iron Works, Terre Haute, Ind.

322. DAVIES, GRAHAM. 1903.

Born March 8, 1878, Springfield, Tenn. Entered the Institute from Louisville, Ky., in 1899; graduated in the Electrical Engineering Course in 1903. From time of graduation to the present time with the Western Electric Company in Chicago and Pittsburgh in Purchase and Supply Department. Now in charge of "service" of company. Was married at South Whitley, Ind., in December, 1904.

323. FISCHER, CARL DITTMAN, JR. 1903.

Entered the Institute from Wapakoneta, Ohio, in 1899, age 18; graduated in the Mechanical Engineering Course in 1903. From 1903 to 1905 with the Atlas Engine Works, Indianapolis, Ind. From 1905 to the present time with the Wapakoneta Machine Company, Wapakoneta, Ohio, as Manager.

324. FITZPATRICK, JAMES EDWARD. 1903.

Entered the Institute from Terre Haute in 1899, age 16; graduated in the Mechanical Engineering Course in 1903. In 1903 with the Union Pacific Railroad Shops, Cheyenne, Wyo., and from 1904 to date with the Union Pacific Railroad Shops at Omaha, Neb.

325. GILBERT, HENRY CURTIS. 1903.

Entered the Institute from Terre Haute in 1899, age 18; graduated in the Mechanical Engineering Course in 1903. From 1903 to 1906 in Mechanical and Electrical Departments of the World's Fair, St. Louis, Mo. In 1906 with the Union Electric Light and Power Company Underground Department, St. Louis, Mo. From 1907-08 with the Department of Electricity Jamestown Exposition, Norfolk, Va. From 1908 to date Superintendent Cable Department Sanitary District, Chicago, Ill.

326. HUNLEY, JOHN BOUDINOT, JR. 1903.

Entered the Institute from Terre Haute in 1889, age 18; graduated in the Civil Engineering Course in 1903. From 1903 to 1905 Acting Assistant Engineer C. C. C. & St. L. Railroad, Mattoon, Ill. In 1905 in Construction Department C. C. C. & St. L. Railroad, Cincinnati, O. From 1907 to date Assistant Engineer C. C. C. & St. L. Railroad, Cincinnati, Ohio. Has designed and supervised the construction of a number of large reinforced concrete structures on the road.

327. IJAMS, JESSE WARREN. 1903.

Born June 19, 1882, Terre Haute. Entered the Institute in 1899, and graduated in the Mechanical Engineering Course in 1903. In 1903 and 1904 graduate student in Civil Engineering Rose Polytechnic Institute. In 1905 and 1906 with the Indiana Harbor Railroad Company as Transitman and Resident Engineer, Hammond, Ind. From 1907 to date Assistant Engineer New York Central & Hudson River Railroad, New York City, N. Y.

328. INGLE, WILLIAM DAVIDSON. 1903.

Entered the Institute from Oakland City, Ind., in 1898, age 17; graduated in the Electrical Engineering Course in 1903. In 1903 and 1904 Draftsman for the St. Louis Transit Company, St. Louis, Mo. From May, 1904, to the present time Superintendent of Ingle Coal Company, Evansville, Ind.

329. JACOB, BRENT COOKE. 1903.

Born February 23, 1879, Oldham County, Ky. Entered the Institute from Louisville, Ky., in 1899; graduated in the Electrical Engineering Course in 1903. In 1903 and 1904 with the Western Electric Company, Chicago. In 1905 Draftsman for the Electric Controller and Manufacturing Company, Cleveland, Ohio. In 1906 in drafting room with the Western Electric Company, Chicago. From March, 1906, in drafting room with the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Was married February 23, 1905, at Valparaiso, Ind.

330. KELLOGG, HENRY SIMMONS. 1903.

Entered the Institute from Bowling Green, Ky., in 1899, age 28; graduated in the Electrical Engineering Course in 1903. In 1903 and 1904 with the St. Louis Terminal Railway Association, St. Louis, Mo. From 1904 to 1909 with the Wagner Electric Manufacturing Company, St. Louis, Mo. At present with the Century Electric Company, St. Louis, Mo.

331. KIEFER, CARL JACKSON. 1903.

Born October 14, 1882, Cincinnati, Ohio. Entered the Institute in 1889; graduated in the Electrical Engineering Course in 1903. From June, 1903, to June, 1904, in the Testing Department of the General Electric Company, Schenectady, N. Y. From June, 1904, to May, 1905, Electrical Engineer Toledo Urban & Inter-

urban Railway Company. May, 1905, to September, 1906, Chief Engineer Cincinnati, Milford & Loveland Traction Company, Milford, Ohio. From 1906 to date partner in the Reliance Engineering Company, Consulting Engineers, Cincinnati, Ohio. Is a member of the A. I. E. E. Was granted degree of M.S. in 1905 and degree of E.E. in 1908 from Rose. This firm owns and operates five electric light, water works, and heating plants, in addition to doing consulting work.

332. KIRBY, EDWARD CASSADY. 1903.

Born June 4, 1881, Muncie, Ind. Entered the Institute in 1899, age 18; graduated in the Mechanical Engineering Course in 1903. In 1903 and 1904 with the General Electric Company, Schenectady, N. Y. In 1905 with the Pike's Peak Hydro-Electric Company, Colorado Springs, Col. In 1905-06 with the General Electric Company, Schenectady, N. Y. From July, 1906, to date Engineer of Light, Heat, and Power Plant with the E. I. Dupont de Nemours Powder Company, Sedalia, Col. Was married October 10, 1908, at Olney, Col.

333. KREIGER, ALBERT AUGUST. 1903.

Entered the Institute from Louisville, Ky., in 1899, age 17; graduated in the Civil Engineering Course in 1903. In 1903 and 1904 with the C. C. C. & St. L. Railroad, Greencastle, Ind. From 1905 to date Assistant Engineer with the Louisville Water Company, Louisville, Ky.

334. LINDENBERGER, GEORGE BAYLESS. 1903.

Entered the Institute from Louisville, Ky., in 1899, age 21; graduated in the Mechanical Engineering Course in 1903. In 1904 in Manufacturing Department, Richmond Branch, of the Kentucky Tobacco Product Company, Richmond, Va. In 1905 and 1906 Manager Richmond Branch of the Kentucky Tobacco Product Company, Richmond, Va. From 1908 to date Superintendent Machinery and Manufacture Kentucky Tobacco Product Company, Louisville, Ky.

335. METZGER, EARL COPE. 1903.

Entered the Institute from Akron, Ohio, in 1899, age 19; graduated in the Mechanical Engineering Course in 1903. From 1903 to 1904 Instructor Mechanical Engineering Christian

Brothers' College, St. Louis, Mo. 1904 to 1905 Electrical Inspector Western Electric Company. 1905 to 1906 Assistant Superintendent Morris & Co., Chicago. In 1906 Mechanical and Electrical Inspector P. R. R., Altoona, Pa. From 1907 to date Chief Mining Machinery Inspector Goodman Manufacturing Company, Chicago.

336. MICHEL, ARTHUR EUGENE. 1903.

Entered the Institute from Marion, Ind., in 1899, age 19; graduated in the Mechanical Engineering Course in 1903. From 1903 to 1905 Draftsman and Designer Diamond Chain and Manufacturing Company, Indianapolis, Ind. In 1905 Assistant Manager of Publicity International Steam Pump Company, Harrison, N. J. From 1906 to 1908 Manager of The Geo. H. Gibson Company, Advertising Engineers, New York City, N. Y. At present in business as an Advertising Engineer, New York City, N. Y. Was granted degree of M.S. in 1906 from Rose. Is a member of the A. S. M. E. Mr. Michel has been the efficient Secretary of the Rose Alumni Club of New York, and has made the meetings most successful.

337. PALMER, HARRY W. 1903.

Entered the Institute from Brockport, N. Y., in 1899, age 23; graduated in the Electrical Engineering Course in 1903. After graduating was with the Western Electric Company, Chicago, Ill. In December, 1903, transferred to the Western Electric Company in New York City. From September, 1904, to 1907 Instructor in Mechanical Drawing, Mathematics, and Physics in the Louisville Male High School, Louisville, Ky. From 1907 to the present time with the Louisville Cement Company, Sellersburg, Ind., as Mechanical Engineer and Assistant Superintendent. Was married June, 1906, in Terre Haute, Ind.

338. PEDDLE, WILLIAM ADRIAN. 1903.

Entered the Institute from Washington, D. C., in 1899, age 23; graduated in the Mechanical Engineering Course in 1903. From July, 1903, to November, 1903, Assistant Engineer Signal Department Interborough Rapid Transit Company, New York City. From November, 1903, to November, 1904, Assistant Foreman Union Switch and Signal Company, New York City. From January, 1905, to April, 1906, Engineer in charge of Construction Interborough Rapid Transit Company Signal Depart-

ment. From April, 1906, to December, 1907, Assistant Engineer N. Y. C. & H. R. Railroad Signal Department Electric Zone. From December, 1907, to the present time Assistant Signal Engineer Exterior Zone N. Y. C. & H. R. Railroad, New York City.

339. PETTIT, HARVEY BLAIR. 1903.

Entered the Institute from Owensboro, Ky., in 1899, age 20, and graduated in the Electrical Engineering Course in 1903. From 1903 to July, 1907, with the Western Electric Company, Chicago, Ill. From July, 1907, to March, 1908, with the Western Electric Company, San Francisco, Cal. From April, 1908, to the present time in the Auditor's office of the Chicago Telephone Company, Chicago, Ill. Was married August 25, 1908, in Chicago.

340. PINE, BENJAMIN HALBERT. 1903.

Born September 6, 1879, Cincinnati, Ohio. Entered the Institute in 1899; graduated in the Civil Engineering Course in 1903. In 1903 to June, 1904, with the Roebing Construction Company, Chicago, Ill. From June, 1904, to the present time with the Citizens' Mutual Heating Company, Terre Haute. Was married in Terre Haute October 14, 1903.

341. POST, CHESTER LEROY. 1903.

Born August 2, 1880. Entered the Institute from Gordon, Ohio, in 1899; graduated in the Civil Engineering Course in 1903. From May, 1903, to May, 1904, Masonry Inspector on the C. I. & L. Short Line, Hillsboro, Ill. From May, 1904, to September, 1904, Resident Engineer on Railroad Construction in and near Indianapolis for the St. Louis Division Big Four. September, 1904, to June, 1905, Assistant in Civil Engineering and graduate student Rose Polytechnic Institute. June, 1905, to October, 1906, Superintendent with A. J. Yawger, Contracting Engineer, Indianapolis, Ind. From October, 1906, to April, 1907, Superintendent of Construction Marquette Cement Company, La Salle, Ill. April, 1907, to June, 1908, with Condron & Sinks Company, Chicago. From June, 1908, to October, 1908, with E. C. & R. M. Shankland, Engineers, Chicago, and from October, 1908, to date as Principal Assistant Engineer with Condron & Sinks, Chicago, Ill. Was granted degree of M.S. in 1905 from Rose. Is an associate member of the A. S. C. E. Was married May 6, 1908.

342. RUMBLEY, FREDERICK NEWTON. 1903.

Entered the Institute from Terre Haute in 1899, age 17; graduated in the Mechanical Engineering Course in 1903. In 1903 and 1904 Draftsman in the Vandalia Shops, Terre Haute, and from 1905 to 1909 Chief Draftsman. In March, 1909, went with the Mexican Central Railway Company, Aguas Calientes, Aguas, Mexico. Was married in Terre Haute, 1907.

343. SCHEFFERLY, ROBERT JOSEPH. 1903.

Was born at Mt. Clemens, Mich., March 19, 1879, and entered the Institute in 1899 from Detroit; graduated in the Mechanical Engineering Course in 1903. From 1903 to 1904 Draftsman with the Standard Wheel Company, Automobile Department, Terre Haute. From June, 1904, to July, 1905, in Experimental Department Olds Motor Works, Detroit, Mich. From August, 1905, to March, 1906, with the Muncie Wheel and Jobbing Company, Muncie, Ind., in charge of the Automobile Parts Department. From May, 1906, to date with the Everett, Metzger & Flanders Company, and is at present Assistant Designer in charge of the experimental work. Was married August 5, 1908, in Terre Haute.

344. SMITH, CLAIBORNE ELLIS. 1903.

Entered the Institute from Evansville, Ind., in 1899, age 19; graduated in the Civil Engineering Course in 1903. From July to September, 1903, with the L. & N. Railroad in Assistant Engineer's office, Evansville. 1903 to 1906 with the E. & T. H. Railroad as Instrument Man and Assistant Engineer. 1906 and 1907 Assistant Engineer with the Raleigh & Pamlico Sound Railroad, Raleigh, N. C. In 1907, owing to ill health, spent several months in California. From 1907 to date Assistant Engineer and Chief Draftsman City Engineer's office, San Diego, Cal. Has designed sewer systems, concrete structures, and worked on all the various problems presented in a City Engineer's office.

345. WIEDEMANN, HUGO EDMUND. 1903.

Entered the Institute from Terre Haute in 1898, age 16; graduated in Chemistry in 1903. From August, 1903, to June, 1905, Chemist for Nelson, Morris & Co., East St. Louis, Ill. From June, 1905, to the present time member of the firm Kessler &

Wiedemann, Consulting Chemists and Chemical Engineers, St. Louis, Mo. Also Professor of Chemistry and Toxicology in the Homœopathic Medical College of Missouri, St. Louis, Mo. Was given degree of M.S. in 1907 from Rose. Is President of the St. Louis Chemical Society.

346. WILLIAMS, JOHN PETER ALEXANDER. 1903.

Entered the Institute from Terre Haute in 1898, age 18; graduated in the Mechanical Engineering Course in 1903. From 1903 to 1906 Engineer Vigo Ice and Cold Storage Company, Terre Haute. 1906 to 1908 with the Allis-Chalmers Company, Milwaukee, Wis. In 1908 Engineer Ice Utilities and Manufacturing Company, Carbon Hill, Ala. From 1909 with the City Ice Company, of Augusta, Ga., as Engineer. Was married June, 1904.

347. BARBAZETTE, JOHN HARRY. 1904.

Born at Beardstown, Ill., April 8, 1882. Entered the Institute in 1900, graduating in the Mechanical Engineering Course in 1904. From July, 1904, to November, 1904, with the La Belle Iron Works, Steubenville, Ohio. From November, 1904, to November, 1905, with the Louisville Cement Company, Sellersburg, Ind. From November, 1905, to April, 1906, with the Iola Portland Cement Company, Iola, Kan. From April, 1906, with the Chicago Portland Cement Company, Oglesby, Ill., and 1906 to 1909 Draftsman American Bridge Company, Chicago. Since February, 1909, to the present time with the Universal Portland Cement Company, Buffington, Ind. Married in Terre Haute, Ind., June, 1906. Mr. Barbazette's work has been mainly in cement plant construction.

348. BOWSHER, WILLIAM HOWARD. 1904.

Entered the Institute from Topeka, Ind., in 1900, age 18, and graduated in the Mechanical Engineering Course in 1904. In July, 1904, with the General Electric Company, Schenectady, N. Y. Since August, 1904, with the United States Marine Corps.

349. BRANNON, CLIFTON. 1904.

Entered from Owensboro, Ky., in 1900, age 18, and graduated in the Civil Engineering Course in 1904. In July, 1904, with the Southern Indiana Railway, Terre Haute. 1905 in Mainte-

nance of Way Department Vandalia Railway, Terre Haute. From October, 1906, to date Assistant Engineer E. & T. H. Railroad, Evansville, Ind. Was married at Terre Haute in 1908.

350. BRYON, ERNEST. 1904.

Entered from Boise, Idaho, in 1900, age 18; graduated in the Mechanical Engineering Course in 1904. From July, 1904, to 1906 with the General Electric Company, Lynn, Mass. 1906 with the Stirling Construction Boiler Company, Mansfield, Ohio. 1907 was obliged to retire on account of poor health. Died May 6, 1908, at La Mesa, Cal.

351. COHN, CLARENCE ALEXANDER. 1904.

Entered from Salt Lake City in 1899, age 18; graduated in the Electrical Engineering Course in 1904. In 1904 with the Telluride Light and Power Company, Provo, Utah. 1905 to date with the Utah Light and Railway Company, Salt Lake City, Utah, as Operator, Draftsman, General Operator in Power Station Department, Assistant to Superintendent Power Stations, and as Superintendent of Power Stations Department. The Power Station Department operates seven plants and five substations, 125 miles of high-tension transmission.

352. CORY, MARK DEE. 1904.

Born at DeGraff, Ohio, November 17, 1880. Entered the Institute in 1902; graduated in the Civil Engineering Course in 1904. From July, 1904, to 1906 Draftsman Mt. Vernon Bridge and Iron Works, Mt. Vernon, Ohio. From 1906 to 1908 with the Indiana Bridge Company, Muncie, Ind. From 1908 to date Director Engineering School of Winona, Winona Lake, Ind. During summers of 1902 and 1903 worked as Division Engineer M. P. Railroad and at the World's Fair, St. Louis.

353. CRAIN, GEORGE HENRY. 1904.

Born August 9, 1880, Des Moines, Iowa. Entered from Grand Rapids, Mich., in 1900; graduated in the Electrical Engineering Course in 1904. From 1904 to 1906 with the Westinghouse Electric Company, Pittsburg, Pa. In 1906 with the Otis Elevator Company, Yonkers, N. Y. In 1907 Assistant Estimator Marine Engine and Machine Company, New York City. From 1908 to date with Morgan & Wright, Detroit Rubber Works, Detroit, Mich.

354. DORN, LEO FRANCIS. 1904.

Born December 24, 1879, at Louisville, Ky. Entered the Institute in 1899. Withdrew in March, 1901, on account of his father's death; reentered September, 1901, and graduated in the Electrical Engineering Course in 1904. In 1905 with the Louisville Southern Electric Company, Electric Contractors, Louisville. From 1906 to March, 1908, art student in the Whipple School of Art, Art Students' League, and National School of Art. From March, 1908, to the present time Manager National School of Art, New York City.

355. FRENCH, CARSON GEYER. 1904.

Entered from Buchanan, Mich., in 1900, age of 21; graduated in the Civil Engineering Course in 1904. In 1904 to 1905 Draftsman Southern Indiana Railway, Terre Haute. From 1905 to 1907 Assistant Engineer Construction Department Big Four Railway, Cincinnati, Ohio. From 1907 to date with Maintenance of Way Department Chicago & Eastern Illinois Railway, Chicago. Married in Terre Haute. During the last three years Mr. French has been mainly engaged in bridge work.

356. GARRETTSON, ROBERT FRANKLIN. 1904.

Was born in Terre Haute January 3, 1880. Entered the Institute in 1900, and graduated in the Electrical Engineering Course in 1904. In 1904 associated himself with Mr. Boyd as Consulting Engineer under style of Boyd & Garrettson, and has remained identified with this firm to date. In addition was Secretary and Local Manager of the Citizens' Gas and Electric Company, Paris, Ill., in 1904 and 1905. Secretary and Associate Manager Michigan City Light and Power Company, 1906 and 1907, and has been active in the organization of a local National Bank at Michigan City. Is a member of the A. I. E. E. Was married June 17, 1908. Mr. Garrettson's work as Mechanical Engineer has been mainly along lines of reconstruction and re-designing existing electric light and gas plants and organizing them upon profitable basis.

357. HAHN, FERDINAND WILLIAM. 1904.

Entered from Louisville, Ky., in 1901, age 19; graduated in the Mechanical Engineering Course in 1904. From 1904 to April, 1906, with the Louisville & Nashville Railroad, Louisville. From April, 1906, to date with the Rodger Ballast Car Company and the National Dump Car Company, Chicago.

358. HAZARD, WILLIAM HORACE. 1904.

Entered the Institute in 1900 from Terre Haute, age 19; graduated in the Mechanical Engineering Course in 1904. With the Fairbanks-Morse Company, Beloit, Wis., from 1904 to date as Draftsman, Experimental Engineer, Sales Engineer, and Special Engineer in the Gas Producer and Gas Engine Department. Designer and Estimator. Was married in 1908 in Bradford, Wis.

359. HILL, ROY WILSON. 1904.

Born January 12, 1881, at Frankfort, Mich. Entered from Chicago, Ill., from Lewis Institute, in the Junior Class in 1902; graduated in the Electrical Engineering Course in 1904. From graduation to date of the firm of Hill & Hill, Lawyers, Specialty, Patent, Trademark, and Corporation Law. Was granted degree of Bachelor of Laws in 1907 from the Northwestern University Law School. Is a member of the Franklin Institute and an associate member of the A. I. E. E.

360. KATZENBACH, BROWN. 1904.

Entered from Terre Haute in 1899, age 16; graduated in Chemistry in 1904. In 1904 Assistant Superintendent Fairview Fluor Spar Company, Golconda, Ill. In 1905 Chief Chemist Allegheny Steel Company and Interstate Steel Company, Brackenridge, Pa. From 1906 to 1908 Superintendent Open Hearth Furnaces American Rolling Mills, Middletown, Ohio. At present is in Indianapolis, Ind.

361. LANDRUM, ROBERT DALLAS. 1904.

Born in Terre Haute, Ind., February 8, 1882. Entered the Institute in 1900; graduated in Chemistry in 1904. From August, 1904, to October, 1907, Chemist for the Columbian Enameling and Stamping Works, Terre Haute. From October, 1907, to date Assistant Professor of Chemistry in charge of Quantitative Analysis, Metallurgy and Assaying, University of Kansas, Lawrence, Kan. Was married September 1, 1908, at Linton, Ind.

362. McCORMICK, CHARLES CHESNUT. 1904.

Entered from Terre Haute in 1900, age 18; graduated in the Civil Engineering Course in 1904. From September, 1904, to April, 1905, Assistant to Roadmaster, Omaha Division, Illinois

Central Railroad, Fort Dodge, Ia. From April, 1905, to 1907, Vice-President and Superintendent Wabash Sand and Gravel Company, Terre Haute. In 1907 Drainage Engineer, Charleston, Ill. In 1909 Assistant Engineer Chicago Junction Railway, Chicago. Married in 1905 at Terre Haute.

363. MCFARLAND, EDWARD HILL. 1904.

Entered from Crawfordsville, Ind., in 1900, age 18; graduated in the Electrical Engineering Course in 1904. From 1904 to 1907 in the Steam Turbine Department of the General Electric Company, as Research Assistant, Assistant in Charge, and Steam Turbine Engineer, Schenectady, N. Y. From 1907 to date District Steam Turbine Engineer for the Cincinnati office of the General Electric Company, in charge of engineering and construction of turbine installations. Was granted degree of M.S. in 1906 from Rose.

364. MCNABB, WALTER SCOTT. 1904.

Entered from Terre Haute in 1900, age 17; graduated in the Mechanical Engineering Course in 1904. From July, 1904, to 1905 Special Apprentice Union Pacific Railway Shops, Omaha, Neb. From 1905 to 1906 Draftsman for the Aultman & Taylor Company, the McKenna Manufacturing Company, the Jacobs Steel Excavator Company, the Case Manufacturing Company, and the Illinois Steel Company. In 1907 Superintendent Brown Process Company, Chicago. From September, 1907, to date Blast Furnace Superintendent Illinois Steel Company, Chicago. Was married September 18, 1907.

365. MILLER, MERWINE BUCKINGHAM. 1904.

Entered from Afton, Ia., in 1899, age 19; graduated in the Mechanical Engineering Course in 1904. From July, 1904, to 1906 in Turbine Department General Electric Company, Lynn, Mass. From 1906 to date with the Allis-Chalmers Company, Milwaukee, Wis.

366. MULLETT, HOWARD AGUSTINE. 1904.

Born December 11, 1880, in Louisville, Ky. Entered from Kansas City in 1900; graduated in the Electrical Engineering Course in 1904. From July, 1904, to 1906 Engineering Apprentice with the Westinghouse Electric and Manufacturing Company, Pittsburgh. From July, 1906, to date Electrical Engineer of the Roll-

ing Stock Department of the Electric Railway and Lighting Company, Milwaukee, Wis. Is a member of the Associated Societies of Engineering. Married—see *Technic* of February, 1909, for information.

367. NOELKE, WILLIAM CARL. 1904.

Born November 21, 1875, in Indianapolis. Entered in 1901, in the Sophomore Class, at the age of 25, and graduated in Architecture in 1904. From July, 1904, to date with the Noelke-Richards Iron Works, Indianapolis, Ind., as Estimator and Engineer. Mr. Noelke has made designs for steel frame structures for large buildings. They supply the distant South and West mainly.

368. RANDALL, WILLIAM HARRISON. 1904.

Entered from Williamsville, N. Y., in 1892, age 19. Course was interrupted, and reentered in 1900; graduated in the Electrical Engineering Course in 1904. From time of graduation to date with the General Electric Company, Schenectady, N. Y.

369. REGAN, JOHN FRANCIS. 1904.

Born July 29, 1882, in Terre Haute. Entered in 1900, age 18; graduated in the Mechanical Engineering Course in 1904. From July, 1904, to 1905 with Ohio Works, Carnegie Company, Youngstown, O. From 1905 to 1907 Special Apprentice and in Sales Department Atlas Engine Works, Indianapolis. From 1908 to date Chief Clerk of Blast Furnaces, Youngstown Sheet and Tube Company, Youngstown, O.

370. ROSS, JAMES NEWTON. 1904.

Entered from Anaconda, Mont., in 1900, age 22; graduated in the Mechanical Engineering Course in 1904. From July, 1904, to 1906 with the Buffalo Forge Company, Buffalo. From 1906 to 1908 with the Westinghouse Machine Company, New York City. In 1909 Mechanical Engineer, New York City, N. Y.

371. SHARP, JAMES STUART. 1904.

Born August 18, 1879, in Summit, Miss. Entered from Clinton, Miss., to Junior Class in 1902; graduated in the Civil Engineering Course in 1904. From September, 1904, to June, 1905, Professor of Mathematics, Ouachita College, Arkadelphia, Ark. In

1905 Instrument-man Great Northern Railroad. In 1906 Assistant City Engineer, Jackson, Miss. In 1906 to 1907 Assistant Engineer A. V. R. R. Co. From 1907 to date Assistant Engineer Queen & Crescent Route, New Orleans. Was married October 1, 1907. Mr. Sharp has charge of much of the concrete and other designs.

372. SMITH, HARRY. 1904.

Born February 6, 1882, in Terre Haute. Entered the Institute in 1899; graduated in the Mechanical Engineering Course in 1904. From June, 1904, to August, 1904, in the Union Pacific Railway Shops, Omaha. From November, 1904, to June, 1906, on Surveying Corps Vandalia Railroad, Terre Haute. From June, 1906, to November, 1906, with the New York Central Railroad. From November, 1906, to date Assistant Engineer Standard Steel Car Company, Hammond, Ind. Married in September, 1906, at Danville, Ill.

373. STAFF, JOHN THEODORE, JR. 1904.

Born in Terre Haute December 26, 1880. Entered the Institute in 1900; graduated in the Mechanical Engineering Course in 1904. From 1904 to 1906 associated with his father, John T. Staff, in canning vegetables, etc., Terre Haute. In 1906 in the pineapple business in Hawaii. In 1907, with others, formed a Consolidated Pineapple Company, Honolulu, Hawaii, and at present is the Manager and Head of the Packing Department. Mr. Staff's work is especially in installing and operating canning machinery.

374. TIPTON, CLYDE EPHRAIM. 1904.

Entered the Institute from Terre Haute in 1900, age 21; graduated in the Mechanical Engineering Course in 1904. From July, 1904, to 1906 in the shops of the Union Pacific Railway at Omaha, Neb. From 1906 to date in the shops of the Union Pacific Railway at Council Bluffs, Iowa. Married.

375. TONER, IRWIN DE WITT. 1904.

Entered the Institute from Terre Haute in 1900, age 18, and graduated in the Mechanical Engineering Course in 1904. From July, 1904, to 1906 in shops of Union Pacific Railway, Omaha. From 1906 to date Inspector of New Equipment, Union Pacific Railway Company, Omaha, Neb.

376. TOUZALIN, LESLIE ANTHONY. 1904.

Born in Chicago September 8, 1881. Entered the Institute, in the Sophomore Class, in 1901; graduated in Chemistry in 1904. From 1904 to 1905 Chemist in Laboratory of H. M. Deavitt, Chicago. From 1905 to 1906 Chemist, and from 1906 to the present time Assistant Chief Chemist for the Illinois Steel Company, Southern Works, Chicago. Is a member of the A. C. S. Married in Chicago November 28, 1905. Mr. Touzalin has studied the problem of oxygen and nitrogen in steel, also in connection with determination of moisture and dust in blast furnace gases. He invented the Brady Gas Filter.

377. WHITTEN, ROSCOE. 1904.

Entered the Institute from Sloan, Ia., in 1900, age 17; graduated in the Mechanical Engineering Course in 1904. From July, 1904, to 1905 with the General Electric Company, Schenectady, N. Y. From 1905 to date with the Atlas Engine Works, Indianapolis, Ind. Married in 1906.

378. ATHERTON, DONALD HOPE. 1905.

Entered the Institute from Gill, Mass., in 1901, age 20; graduated in the Mechanical Engineering Course in 1905. From graduation to the present time with the General Electric Company, Schenectady, N. Y.

379. BENSON, GEORGE, JR. 1905.

Entered the Institute from Brockport, N. Y., in 1901, age 24; graduated in the Electrical Engineering Course in 1905. From time of graduation to the present time with the General Electric Company, Schenectady, N. Y.

380. BLANCHARD, RALPH CARPENTER. 1905.

Born in Newport, Ind., December 4, 1882. Entered the Institute in 1901, and graduated in Chemistry in 1905. In 1905-06 graduate student Columbia University, New York City. 1907 graduate student University of Munich, Germany. 1908 in London and Paris. In 1908-09 graduate work Columbia University, New York City.

381. BLAND, JOHN OSBORNE. 1905.

Entered the Institute from Louisville in 1901, age 18; graduated in the Mechanical Engineering Course in 1905. From 1905 to

1907 Apprentice L. & N. Ry., Louisville, Ky. In 1907 in Converting Department Carnegie Steel Company, Youngstown, O. From 1908 to the present time with the American Fuel Company, Gibson, N. M.

382. BURR, WALTER HARMON. 1905.

Entered the Institute from Morrison, Ill., in 1901, age 21; graduated in the Electrical Engineering Course in 1905. From graduation to the present time with the Westinghouse Electric and Manufacturing Company. In Pittsburg till December, 1907, and since in Erection Department at Philadelphia.

383. COOK, CLEO BRENTON. 1905.

Entered from Frankfort, Ind., in 1901, age 18; graduated in the Electrical Engineering Course in 1905. 1905 to 1908 with the Bullock Electric Manufacturing Company, Cincinnati, in shops, Engineering and Sales Departments. From 1908 to date Sales Engineer Allis-Chalmers-Bullock Company, Toledo, Ohio.

384. DAILY, JOHN EDWARD. 1905.

Entered from Terre Haute in 1901, age 17; graduated in the Mechanical Engineering Course in 1905. 1905 with the Vandalia Railway Company, in Terre Haute and East St. Louis. 1906 in Engineering Corps C. & E. I. Railroad, Chicago. From 1907 to date in Open Hearth Department Ohio Works Carnegie Steel Company, Youngstown, Ohio.

385. DAVIES, CARL GODFREY. 1905.

Entered the Institute from Marshall, Ind., in 1901, age 20; graduated in the Civil Engineering Course in 1905. 1905 and 1906 with the Gulf, Colorado & Santa Fe Railroad, Texas. 1907 with the Great Northern & St. Paul Railway and Spokane Company. 1908 with the Chicago, Milwaukee & St. Paul Railroad, St. Maries, Idaho. At present Draftsman with Spokane & Inland Empire Railway, Spokane, Wash.

386. EVERSON, RALPH CUTHBERT. 1905.

Entered the Institute from Kearney, Neb., in 1901, at the age of 20, and graduated in the Civil Engineering Course in 1905. From June to September, 1905, with Engineering Corps, Vandalia Railway. Then with the Southern Indiana Coal Company, Terre Haute, to September, 1908, and from that time associated with J. F. Cassell in Civil Engineering, Terre Haute.

387. GOODMAN, LEON. 1905.

Entered the Institute from Terre Haute in 1901, age 17; graduated in the Civil Engineering Course in 1905. In 1905 with the C. & E. I. Railroad Company, Chicago. In 1906 Assistant Engineer C. B. & Q. Railroad, Burlington. Also with the C. Junction Railway, Chicago, in 1906. 1907 with the Roberts & Schaefer Company, Consulting Engineers and Contractors, Chicago; also with Wallace Coats Engineering Company, Portland, Oregon. 1908 Spokane, Seattle & Portland Railway. 1908 to date with Northwestern Expanded Metal Company, Chicago, as Sales Engineer.

388. GRAY, RALPH C. 1905.

Entered the Institute from Youngstown, Ohio, in 1901, age 20; graduated in the Electrical Engineering Course in 1905. From graduation to the present time with the General Electric Company, Schenectady, N. Y.

389. GREENLEAF, GUY WILLIAM. 1905.

Entered the Institute from Terre Haute in 1901; age 19; graduated in the Mechanical Engineering Course in 1905. After graduation was with the Atlas Engine Works, Indianapolis, one year, then Draftsman in County Assessor's office, Terre Haute, one year. Was with the Pettyjohn Concrete Block Machinery Company a short time, and is now a member of the Greenleaf Construction Company, Terre Haute. Was married August 12, 1908, at Terre Haute.

390. HALLER, FREDERICK WILLIAM AUGUST. 1905.

Entered the Institute from Cincinnati in 1901, age 23, and graduated in the Electrical Engineering Course in 1905. From 1905 to 1907 remained at home regaining health. From 1907 to the present time Assistant Examiner United States Patent Office, Washington, D. C.

391. HANLEY, WILLIAM SCOTT. 1905.

Entered the Institute from Terre Haute in 1895 at the age of 19. Withdrew and reentered in 1902; graduated in the Civil Engineering Course in 1905. From graduation to date with the Chicago & Eastern Illinois Railroad Company, Chicago; Chief Draftsman.

392. HEICK, WILLIAM READ. 1905.

Born March 11, 1884, Galveston, Texas. Entered from Louisville in 1902 in the Sophomore Class; graduated in the Mechanical Engineering Course in 1905. After graduating was Draftsman with the Automatic Heating Company, New York; Draftsman with the Westinghouse-Church-Kerr Company, New York; with the Jos. McWilliams Company, Engineers and Contractors, Louisville, for two years, and is at present Engineer for T. J. Mooney & Co., Engineers and Contractors, Nashville, Tenn. Was married in Terre Haute January 25, 1908.

393. JENCKES, RAY GREENE. 1905.

Entered the Institute from Indianapolis in 1901, at the age of 20, and graduated in the Electrical Engineering Course in 1905. From July, 1905, to 1907 in the Testing Department General Electric Company, Schenectady, N. Y. In 1907 engaged in special investigation under Drs. Steinmetz and Creighton on aluminum lighting arresters. In 1907 transferred to Stanley General Electric Works at Pittsfield, Mass., as Superintendent of manufacture of lighting arresters.

394. JOHNSON, WALTER ELIHU. 1905.

Entered the Institute from Emporia, Kan., in 1901, at the age of 24, and graduated in the Electrical Engineering Course in 1905. From graduation to the present time with the General Electric Company, Schenectady, N. Y. Is a member of the Schenectady Branch of the A. I. E. E. Mainly engaged in turbine work.

395. KADEL, HARRY RUTHERFORD. 1905.

Born in Terre Haute May 3, 1880. Entered the Institute in 1901, and graduated in the Mechanical Engineering Course in 1905. From July, 1905, to November, 1906, Superintendent Great Bend Water Works, Great Bend, Kan. From November, 1906, to the present time with the Terre Haute Water Works, Terre Haute, Ind., as Superintendent of Filtration and Assistant Engineer.

396. KIEFER, HERBERT G. 1905.

Entered the Institute from Louisville in 1902 in the Sophomore Class, age 19; graduated in the Mechanical Engineering Course

in 1905. 1905 and 1906 with Fairbanks-Morse Manufacturing Company, Beloit, Wis., and in Louisville Branch. In 1907 Draftsman Henry Vogt Machine Company, Louisville. 1907 with the Kentucky Electric Company, and from 1908 to date Engineer with the Fuel Engineering Company, Chicago. Was granted degree of M.S. in 1907 from Rose.

397. KLENK, LORENZ WILLIAM. 1905.

Born July 7, 1882, at Blue Island, Ill. Entered the Institute in 1901, and graduated in the Electrical Engineering Course in 1905. From graduation to date with the Western Electric Company, Chicago, as Engineer, and now Sales Engineer in the Railway Train Dispatching Department. Married June 19, 1907, at Blue Island, Ill.

398. LARKINS, EDGAR ERNEST. 1905.

Entered from Terre Haute in 1901, at the age of 18, and graduated in the Civil Engineering Course in 1905. From July, 1905, to January 1, 1906, with the Chicago & Eastern Illinois Railroad, Chicago; Draftsman, Field Work, and Masonry Inspector. From January, 1906, to December, 1907, Assistant Engineer Union Pacific Railroad Company, Omaha. From May, 1908, to date Assistant City Engineer Omaha, Neb. Married November 26, 1907. Granted degree of M.S. in 1908 from Rose.

399. LEWIS, FREDERICK BRADLEY. 1905.

Entered the Institute from Anaheim, Cal., in 1901, at the age of 23, and graduated in the Electrical Engineering Course in 1905. From graduation has been with the Edison Electric Company, Los Angeles, in 1905 and 1906 in the Testing Department, and from 1907 to date as Engineer Underground Distribution. Is a member of the A. I. E. E., and was married November 14, 1906.

400. MCBRIDE, JOHN SCOTT. 1905.

Entered the Institute in the Sophomore Class from Louisville in 1902, age 22; graduated in the Civil Engineering Course in 1905. Since graduation has been with the Chicago & Eastern Illinois Railroad Company, Chicago, in the Construction and Maintenance of Way Departments. From April, 1908, to date Assistant Division Engineer, Salem, Ill.

401. NEWNAM, FRANK HASTINGS. 1905.

Born in Terre Haute October 17, 1882. Entered the Institute in 1901, graduating in the Civil Engineering Course in 1905. From June, 1905, to June, 1906, in the Maintenance of Way Department C. C. & St. L. Railroad, Mattoon, Ill. From June, 1906, to October, 1906, Draftsman for W. Waldo, Civil Engineer, Houston, Texas. From October, 1906, to April, 1908, Transitman, Draftsman, and Resident Engineer on Construction Texas Traction Company. From September, 1908, to December, 1908, with the Great Northern Railroad, and from December, 1908, to date in the Engineering Department of the Gulf, Colorado & Santa Fe Railroad. Was married May 25, 1908.

402. PARR, HUBERT. 1905.

Entered the Institute from Fontanet, Ind., in 1901, age 21; graduated in the Electrical Engineering Course in 1905. In 1906 with the Signal Department, Union Pacific Railway, Omaha. 1907 in Colorado and Birmingham, Ala., on account of poor health. Died July 11, 1907, in Birmingham, Ala.

403. PEDDLE, CHARLES RUGAN. 1905.

Entered the Institute from Washington, D. C., in 1901, age 17; graduated in the Civil Engineering Course in 1905. Since graduation in the Signal Department of the Interborough Rapid Transit Company, New York City, as Draftsman and Office Engineer.

404. PFEIF, GEORGE HENRY. 1905.

Entered the Institute from Terre Haute in 1901, age 17; graduated in the Electrical Engineering Course in 1905. From graduation to the present time with the General Electric Company, Schenectady, N. Y. In the Testing Department until the spring of 1907, then in office of the Superintendent of Testing Department, and in 1908 made Assistant to the General Superintendent.

405. REED, MERLE ROLAND. 1905.

Entered the Institute from Terre Haute in 1901, age 18; graduated in the Mechanical Engineering Course in 1905. From September, 1905, to September, 1906, in shops of the Union Pacific Railway, Omaha. From 1906 to date in shops of the Vandalia Railroad, Terre Haute, and is now Chief Draftsman in the Mechanical Engineer's office.

406. REYNOLDS, OSCAR FRANK. 1905.

Born in Terre Haute June 1, 1883. Entered the Institute in 1901, and graduated in Chemistry in 1905. From 1905 to 1906 Chemist Vandalia Railway, Terre Haute. From June, 1906, to June, 1908, Chemist C. & E. I. Railroad, Danville, Ill. From June, 1908, to August, 1908, Secretary Terre Haute Engineering Company. From August, 1908, to date Foreman on Construction of Automatic Block Signals C. R. I. & P. Railroad.

407. ROBERTSON, CLAUDE EVERETT. 1905.

Entered the Institute from Greenup, Ill., in 1901, at the age of 17, and graduated in the Electrical Engineering Course in 1905. In 1905 and 1906 with the General Electric Company, Schenectady, N. Y., and in the Erecting Department Cincinnati District. From 1907 to date Power Engineer with the Toledo Light and Railway Company, Toledo, Ohio. Was given degree of M.S. in 1908 from Rose. Is an associate member of the A. I. E. E. Was married September 22, 1908.

408. SHRYER, HERBERT EVELEIGH. 1905.

Entered from Terre Haute in 1901, at the age of 19, and graduated in Chemistry in 1905. In 1905 with the Procter & Gamble Company, Cincinnati. In 1906 with Armour Soap Works, Chicago. From 1907 to the present time Chemist with the American Tin Plate Company, Elwood, Ind.

409. SNIDER, LEWIS ALBERT. 1905.

Entered the Institute from Terre Haute in 1901, at the age of 17, and graduated in the Mechanical Engineering Course in 1905. From graduation to May, 1906, with the Fairbanks-Morse Manufacturing Company, Beloit, Wis. From May, 1906, to October, 1907, District Erecting Engineer Fairbanks-Morse Manufacturing Company, Indianapolis, Ind. From December, 1907, Mechanical Engineer Grain Elevator Design, Construction, and Equipment for Bartlett, Kuhn & Co., Terre Haute. Was granted degree of M.S. in 1906 from Rose.

410. SPALDING, EDWARD HAMILTON. 1905.

Born Concordia, Kan., December 4, 1879. Entered the Institute in 1901; graduated in the Electrical Engineering Course in 1905. From June, 1905, to December, 1907, Assistant Construc-

tion Engineer Chicago Telephone Company, Chicago, Ill. From December, 1907, to June, 1908, Manager Concordia Electric Light Company. From January 1, 1909, with the Kansas City Electric Light Company, Kansas City, Mo., Power Service and Contract Department.

411. **SPEAKER, CLIFFORD BEECHER.** 1905.

Entered the Institute from Manson, Iowa, in 1901, at the age of 19, and graduated in the Civil Engineering Course in 1905. In 1905 with the Big Four Railway, Mattoon, Ill., as Instrumentman. 1906 and 1907 with the Union Pacific Railway, Rock River, Wyo., as Instrumentman and Sub-Assistant Engineer. From March, 1908, to date Civil Engineer and Contractor, Rawlins, Wyo.; also Land Inspector for State of Wyoming, Cheyenne, Wyo.

412. **SPROULL, JOHN COPPESS.** 1905.

Born April 13, 1878, Dawn, Ohio. Entered the Institute from Ansonia, Ohio, in 1901; graduated in the Mechanical Engineering Course in 1905. From June, 1905, to September, 1906, Experimental Engineer with J. I. Case Threshing Machine Company, Racine, Wis. From September, 1906, to date Instructor in Strength of Materials and Mechanical Engineering Carnegie Technical Schools, Pittsburg, Pa. Is an honorary member of the N. A. S. E., Pittsburg. Married October 3, 1905, at Greenville, Ohio. Does consulting work in addition to work in C. I.

413. **STODDARD, EUGENE KINGSLEY.** 1905.

Born December 3, 1883, Madison, S. D. Entered the Institute in 1901; graduated in the Electrical Engineering Course in 1905. From July, 1905, to September, 1906, with the Fairbanks-Morse Manufacturing Company, Beloit, Wis. From September, 1906, to January, 1907, with the same company in Chicago, and is now Agent for the Company in Des Moines, Ia. Was married October 21, 1908, at Madison, S. D.

414. **TROWBRIDGE, CHARLES BARTLETT.** 1905.

Born January 16, 1884, Decatur, Mich. Entered the Institute in 1901; graduated in the Electrical Engineering Course in 1905. In 1905 and 1906 Draftsman with the Kalamazoo Foundry and Machine Company, and the American Bridge Company, Chicago. From 1906 to 1908 with T. A. Parker Company, Terre

Haute, Checker. From 1908 to 1909 Engineer Eagle Iron Works, Terre Haute. From February, 1909, to date Checker Fort Pitt Bridge Works, Canonsburg, Pa. Married in Terre Haute June 5, 1906.

415. WATSON, HERBERT LOCKRIDGE. 1905.

Born August 19, 1883, in Terre Haute, and entered the Institute in 1901, graduating in the Mechanical Engineering Course in 1905. From June to August, 1905, Engineer with the Kalamazoo Foundry and Machine Company, Kalamazoo. From August, 1905, to date Sales Engineer with the Allis-Chalmers Company, Cleveland, Ohio. Is a member of the A. S. M. E.

416. WILSON, ROBERT MAXWELL. 1905.

Born October 4, 1882, Paris, Ill. Entered the Institute in 1901; graduated in the Civil Engineering Course in 1905. From graduation to the present time a planter, Greenville, Miss.

417. WOOD, OWEN LLEWELL. 1905.

Entered the Institute from Santa Fe, New Mexico, in 1901, at the age of 18, and graduated in the Mechanical Engineering Course in 1905. After graduation was with the Baldwin Locomotive Works, Philadelphia. In 1906 to May, 1907, with the Mexican Central Railroad, Aguascalientes, Mex. From May, 1907, to date Draftsman in office of the United States Surveyor-General in Santa Fe, New Mex., Reno, Nev., and Phoenix, Ariz.

418. WRIGHT, DANIEL DUDLEY. 1905.

Born in Sulphur Springs, Ky., June 8, 1883, and entered the Institute in 1901, graduating in the Electrical Engineering Course in 1905. From graduation with the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. As Engineering Apprentice until 1907, and from that time to date as Sales Engineer in the Pittsburg office.

419. BENBRIDGE, RICHARD WETHERILL. 1906.

Entered the Institute from Terre Haute in 1902, at the age of 17, and graduated in the Mechanical Engineering Course in 1906. Was with the Laidlaw-Dunn-Gordon shops and designing room for one year at Cincinnati, Ohio. Then seven months in Kansas City in Sales Department, and in St. Louis to date as Sales Engineer for the International Steam Pump Company.

420. BUTLER, EARLE SUMMERS. 1906.

Born January 26, 1881, Terre Haute, Ind. Entered the Institute in 1902; graduated in the Civil Engineering Course in 1906. From June, 1906, to June, 1907, Instrumentman and Draftsman in Chief Engineer's office of the Vandalia Railroad Company, Indianapolis. From June, 1907, to date Resident Engineer in Chief Engineer's office at Indianapolis and St. Louis. Married in Terre Haute October 12, 1908.

421. CADDEN, CHARLES ALPHONSE. 1906.

Entered the Institute from Terre Haute in 1902, at the age of 18, and graduated in the Mechanical Engineering Course in 1906. After graduation in the Union Pacific Railway Shops, Omaha, for a short time. Then with the Stone & Webster Company at Terre Haute, San Francisco, and Seattle, and at present with the United States Reclamation Service, Seattle, Wash.

422. CANFIELD, HARRIE RUSSELL. 1906.

Entered the Institute from Aurora, Ind., in 1902, at the age of 19, and graduated in the Electrical Engineering Course in 1906. In 1906 with the North Shore Electric Company, Chicago. In 1907 with Adams & Westlake Company, Chicago. 1908 Draftsman with J. I. Schureman Company, Chicago, and at present Electrical Engineer and Technical Expert with Edgar Tate & Co., Patent Attorneys, New York City.

423. CANNON, JOHN WILLIAM. 1906.

Born August 4, 1884, at Midway, Ky. Entered the Institute in 1902, and graduated in the Mechanical Engineering Course in 1906. From graduation to date with the Allis-Chalmers Company, Milwaukee.

424. CURRY, JOHN ROSCOE. 1906.

Born December 10, 1884, in Terre Haute. Entered the Institute in 1902, and graduated in the Mechanical Engineering Course in 1906. From graduation to date Draftsman with the Murphy Iron Works, Detroit, Mich.

425. D'AMORIM, AMBROSIO. 1906.

Born September 22, 1879. Entered the Institute from Manaus, S. A., in 1903, and graduated in the Electrical Engineering Course in 1906. In 1906 and 1907 with the Terre Haute Elec-

tric Company, Terre Haute. In 1908 went to Rio de Janeiro, Brazil, S. A., to engage in Electrical Engineering. No report has since been received from him.

426. DELLE, FRANK ALVIN, JR. 1906.

Born April 24, 1879. Entered the Institute from Cashton, Wis., in 1903; graduated in the Mechanical Engineering Course in 1906. From graduation to the present time Erecting Engineer with the York Manufacturing Company, York, Pa.

427. EASTWOOD, HARRY WILDER. 1906.

Born September 28, 1885, Louisville, Ky. Entered the Institute in 1902; graduated in the Electrical Engineering Course in 1906. In 1906 in the Electrical Department of the Ohio Works Carnegie Steel Company, Youngstown, Ohio. From 1907 to 1909 Foreman, Erecting Engineer, and Salesman with the Electric Controller and Manufacturing Company, Cleveland, and since the first of 1909 Salesman for the same company in Chicago. Married, 1908.

428. EVANS, ROBERT BALDWIN. 1906.

Born June 15, 1885. Entered from Oxford, Ind., in 1902, and graduated in the Electrical Engineering Course in 1906. From time of graduation to date with the General Electric Company, Schenectady, N. Y.

429. FREUDENREICH, ARNOLD EDWIN. 1906.

Born October 24, 1884. Entered the Institute from Terre Haute in 1902, and graduated in the Electrical Engineering Course in 1906. After graduation in 1906 with the Northern Electric Company, Madison, Wis. Since 1908 no report has been received at the Institute from Mr. Freudenreich.

430. HATCH, FREDERICK NATHANIEL. 1906.

Born June 12, 1885. Entered the Institute from Terre Haute in 1903, and graduated in the Civil Engineering Course in 1906. In 1906 on Engineering Corps San Pedro, Los Angeles & Salt Lake Railway, Salt Lake City, Utah. In 1907 with the Nevada Consolidated Copper Company on construction of the reduction works, Ely, Nev., and with the Maintenance of Way Department Frisco Lines, Monett, Mo. At present with the Maintenance of Way Department Vandalia Railroad at Logansport, Ind.

431. HENSGEN, WALTER OTTO. 1906.

Born August 18, 1884. Entered the Institute from Terre Haute in 1902, and graduated in the Electrical Engineering Course in 1906. In 1907 with the Seattle Electric Company, Seattle, Wash. At present with the Seattle Telephone Company, Seattle, Wash.

432. JACKSON, JAMES SAMUEL. 1906.

Born March 16, 1885, at Terre Haute, and entered the Institute in 1902, graduating in the Mechanical Engineering Course in 1906. From graduation to the present time with the Allis-Chalmers Company, Milwaukee, Wis. Is a member of the Allis-Chalmers Engineering Society.

433. JOHNSON, JOHN MCMAHON. 1906.

Born June 6, 1883, at Dale, Ind. Entered the Institute in 1902, and graduated in the Electrical Engineering Course in 1906. From July, 1906, to September, 1907, in shops of the Fairbanks-Morse Electric Manufacturing Company, Indianapolis. From September, 1907, to September, 1908, traveling, testing, and installing machinery for the same company. From September, 1908, to date in the Sales Department of the Fairbanks-Morse Electric Manufacturing Company, Chicago.

434. KAHLERT, ERNEST DOUGLAS. 1906.

Born November 10, 1878, and entered the Institute from Louisville, Ky., in 1903; graduated in the Civil Engineering Course in 1906. In 1906 Chief Draftsman for the Insley Iron Works, Indianapolis. 1907 with the Illinois Steel Company, Chicago. From August, 1907, Chief Draftsman Insley Iron Works, Indianapolis. From 1908 to date in the Engineering Department of the Brown-Ketcham Iron Works, Indianapolis, Ind.

435. KELSALL, GEORGE AVERY. 1906.

Born October 18, 1880. Entered the Institute from Louisville in 1902, and graduated in the Electrical Engineering Course in 1906. From time of graduation to 1908 with the General Electric Company, Schenectady, N. Y. Since 1908 with the Indiana Steel Company, Gary, Ind.

436. LAWTON, CLARENCE WILLIAM. 1906.

Born April 4, 1882, at Clarkson, N. Y. Entered the Institute in 1902, and graduated in the Electrical Engineering Course in

1906. From graduation with the General Electric Company, Schenectady, N. Y., and since January, 1909, Foreman in the Steam Turbine Department.

437. LEE, ADDISON WOLCOTT. 1906.

Born July 31, 1885. Entered the Institute from Louisville in 1902, and graduated in the Electrical Engineering Course in 1906. From 1907 to 1909 with the Louisville Lighting Company, Louisville, Ky. Since January, 1909, Inspector and Engineer Tenth Street Plant of the Louisville Lighting Company, Louisville.

438. LEE, EARLE PORTMESS. 1906.

Born March 25, 1881. Entered the Institute from Terre Haute in 1902, and graduated in the Electrical Engineering Course in 1906. In 1906 with the Wagner Electric Manufacturing Company, St. Louis, Mo. In 1907 and 1908 with the Fairbanks-Morse Electric Company, Indianapolis, Ind. 1909 to date Draftsman with Hall Signal Company, Garwood, N. J.

439. McCOMB, HAROLD. 1906.

Was born in Terre Haute March 29, 1884. Entered the Institute in 1902, and graduated in the Electrical Engineering Course in 1906. From graduation to 1909 with the General Electric Company, Schenectady, N. Y. Is at present Sales Engineer with the General Electric Company, Columbus, Ohio.

440. MODESITT, CHARLES CLEVELAND. 1906.

Born May 14, 1884. Entered the Institute from Edwards, Ind., in 1902, and graduated in the Civil Engineering Course in 1906. From 1906 to 1908 with the Vandalia Railroad Company at Indianapolis, and the Engineering Corps Chicago & Eastern Illinois Railway, Danville, Ill. His present address is Edwards, Ind.

441. NICHOLSON, GEORGE FRANCIS. 1906.

Born October 10, 1884. Entered the Institute from Terre Haute in 1901, and graduated in the Mechanical Engineering Course in 1906. From graduation to 1908 Topographer and Draftsman Mexican Central Railroad Company, Pautepec Edo. de Pueblo, Mex. In 1908 with the Terre Haute Engineering Company, Terre Haute. 1909 Civil Engineer for Strehlow, Freese &

Peterson, Contractors at A.-Y.-P. Exposition Grounds, Seattle, Wash.

442. PECK, WALTER RICHARD. 1906.

Born October 3, 1882. Entered the Institute from Terre Haute in 1900, and graduated in the Civil Engineering Course in 1906. After graduation went into the firm of Fox & Peck, Civil and Mining Engineers, Big Stone Gap, Va., where he remains to date.

443. POTE, FRANK WALTER. 1906.

Born February 18, 1883. Entered the Institute from Terre Haute, and graduated in the Electrical Engineering Course in 1906. From graduation until 1907 with the Western Electric Company, Chicago, in the Switchboard and Telephone Department. In 1907 with the Bell Telephone Company of Missouri, located in St. Louis, as General Foreman and Inspector. In 1908 to date Instructor in the Physical and Electrical Laboratories Rose Polytechnic Institute, Terre Haute.

444. ROGERS, HARVEY ERNEST. 1906.

Born April 1, 1883. Entered the Institute from Terre Haute in 1902, and graduated in Architecture in 1906. From graduation until the present time has been in Indianapolis, Ind., as Shop Inspector Insley Iron Works, with the Noelke-Richards Iron Works, and is now Draftsman for the Brown-Ketcham Iron Works.

445. ROTZ, JOHN MARTIN. 1906.

Born July 12, 1884. Entered the Institute from Prairieton, Ind., in 1902, and graduated in the Civil Engineering Course in 1906. From graduation to 1908 with the Engineering Corps of the Vandalia Railroad Company, Terre Haute. From 1908 to date Bridge Superintendent of Vigo County, Terre Haute, Ind.

446. RYAN, EDWARD CECIL. 1906.

Born May 26, 1884. Entered the Institute from Louisville in 1902, and graduated in the Electrical Engineering Course in 1906. From 1906 to 1907 with the General Electric Company, Schenectady, N. Y. In 1907 with the Kentucky Electric Company, Louisville. From 1908 to date with the Indiana Steel Company, Gary, Ind.

447. SCHAUWECKER, EDGAR JACOB. 1906.

Born February 22, 1884. Entered the Institute from Clay City, Ind., in 1902, and graduated in the Civil Engineering Course in 1906. From June, 1906, to November, 1906, Masonry Inspector Big Four Railway. From November, 1906, to June, 1907, Assistant Engineer Florida East Coast Railway. From June 19, 1907, to August, 1908, Superintendent of Bridge Construction and Railroad Grade Work same company. From August, 1908, to date of Norton & Schauwecker, Railroad Contractors, Cincinnati, Ohio.

448. THURMAN, ROY. 1906.

Born August 6, 1884. Entered the Institute from Terre Haute in 1902, and graduated in the Electrical Engineering Course in 1906. From graduation to the present time with the General Electric Company, Schenectady, N. Y.

449. WHITE, KNOWLES D. 1906.

Born July 16, 1884. Entered the Institute from Shelbyville, Ill., in 1902, and graduated in the Electrical Engineering Course in 1906. From graduation to the present time in the Testing Department of the Commonwealth Edison Company, Chicago. Married in April, 1907.

450. WILKINS, HALLIE EMERSON. 1906.

Born December 7, 1884. Entered the Institute from Greenup, Ill., in 1904, and graduated in the Electrical Engineering Course in 1906. From graduation to the present time with the General Electric Company, Schenectady, N. Y.

451. WILLIEN, LEON JOHN, JR. 1906.

Born September 22, 1885. Entered the Institute from Terre Haute in 1902, and graduated in Chemistry in 1906. From graduation to June, 1907, with A. D. Little, Chemical Expert and Engineer, Boston. From 1907 to the present time Chemist for the Springfield Gas Light Company, Springfield, Mass. Received M.S. degree from Rose in 1908.

452. WILMS, HENRY JOHN. 1906.

Born July 13, 1882. Entered the Institute from Louisville, Ky., in 1902, and graduated in the Electrical Engineering Course in 1906. From 1906 to 1908 with the General Electric Company,

Schenectady, N. Y. Died of typhoid fever September 17, 1908, at Schenectady.

453. WISCHMEYER, CARL. 1906.

Born August 8, 1884. Entered the Institute from Louisville, Ky., in 1902, and graduated in the Electrical Engineering Course in 1906. In 1906 in the Electrical Department Carnegie Steel Company, Youngstown, Ohio. In 1907 in the Electrical Department of the Bethlehem Steel Company, South Bethlehem, Pa. In 1908 with the Louisville Water Company, Louisville. In 1909 Instructor in Department of Drawing and Descriptive Geometry Rose Polytechnic Institute, Terre Haute.

454. WISCHMEYER, HENRY WINTER. 1906.

Born October 10, 1879. Entered from Louisville, Ky., in 1903, and graduated in the Electrical Engineering Course in 1906. From graduation to date with the Louisville Railway Company, Louisville, Ky., and at present is Assistant Electrician Motive Power Department.

455. WORTHINGTON, ARTHUR WHITTEMORE. 1906.

Born April 26, 1885. Entered the Institute from Terre Haute in 1901; withdrew in 1902 to gain practical experience in railway construction; reentered in 1903, and graduated in the Civil Engineering Course in 1906. From 1906 to December, 1908, with the Pittsburg Division of the Pennsylvania Lines, and from December, 1908, to the present time with Engineering Corps of the Eastern Division of the Pennsylvania Lines West of Pittsburg, with headquarters at Pittsburg, Pa.

456. ALBIN, EARL GARFIELD. 1907.

Born August 1, 1881. Entered the Institute from Osage City, Kan., in 1903, and graduated in the Civil Engineering Course in 1907. From graduation to 1908 with the Bridge Engineering Department Illinois Central Railway, Chicago. In 1909 with R. J. Starr, General Contractor, Electric, Montana.

457. ANDRICK, WALLACE PFAU. 1907.

Born July 17, 1887. Entered the Institute from Terre Haute in 1903, and graduated in the Electrical Engineering Course in 1907. From graduation to the present time with the General Electric Company, Schenectady, N. Y.

458. AUSTIN, HAROLD SAMUEL. 1907.

Born in Terre Haute October 24, 1884, and entered the Institute in 1903, graduating in Chemistry in 1907. From graduation to the present time with the Laclede Gas Light Company, St. Louis, Mo.

459. BAYLOR, HARRY DIETRICH. 1907.

Born March 2, 1882. Entered the Institute from Tremont, Ill., in 1902, and graduated in Chemistry in 1907. From June, 1907, to January, 1908, Chemist for the Minneapolis Gas Company, Minneapolis, Minn. From January, 1908, to the present time Chief Chemist for the Louisville Cement Company, Sellersburg, Ind. Was married October 28, 1908, at Pekin, Ill.

460. BOGRAN, LUIS. 1907.

Born February 24, 1886. Entered the Institute from Santa Barbara, Honduras, in 1903, and graduated in the Civil Engineering Course in 1907. From graduation to the present time with the Mexican Central Railway, Necaxa, Puebla, Mexico.

461. BOND, RUFUS LLOYD. 1907.

Born July 16, 1884. Entered the Institute from Abingdon, Ill., in 1904, and graduated in the Electrical Engineering Course in 1907. In 1907 with the General Electric Company, Schenectady, N. Y. Since February 1, 1909, with the Indiana Steel Company, Gray, Ind. Married August 24, 1908.

462. BYRN, DEXTER HICKMAN. 1907.

Born August 26, 1881. Entered the Institute from Terre Haute in 1903, and graduated in the Mechanical Engineering Course in 1907. From graduation to the present time in the Motor Car Department Union Pacific Railroad Shops, Omaha, Neb.

463. CASH, FREDERICK HARRISON. 1907.

Born July 31, 1884. Entered the Institute from Hume, Ill., in 1903, and graduated in the Civil Engineering Course in 1907. From June, 1907, to January, 1908, with the Engineering Corps of the Evansville & Terre Haute Railroad Company, Evansville, Ind. Since 1908 with Frank Kattman, Civil and Mining Engineer, Brazil, Ind.

464. DAVIS, REN MONTAGUE. 1907.

Born June 23, 1878. Entered the Institute from Newport, Ind., in 1903, and graduated in the Mechanical Engineering Course in 1907. From graduation to the present time in shops of the Union Pacific Railway, Omaha, Neb.

465. GOODMAN, MILTON. 1907.

Born June 18, 1885, and entered the Institute from Terre Haute in 1903, and graduated in Chemistry in 1907. From graduation to the present time Assistant City Chemist Louisville, Ky.

466. HALL, SCHULER PLATO. 1907.

Born October 19, 1885, and entered the Institute from Terre Haute in 1903, graduating in the Electrical Engineering Course in 1907. From graduation to the present time with the General Electric Company, Schenectady, N. Y.

467. KELLY, WARREN WINFIELD. 1907.

Born November 30, 1885. Entered the Institute from Topeka, Kan., in 1903, and graduated in the Civil Engineering Course in 1907. From June to September, 1907, Instrumentman C. M. & St. P. Railway, Milwaukee. From September, 1907, to date Transitman with the Atchison, Topeka & Santa Fe Railroad Company, Chillicothe, Ill.

468. KRANICHFELD, DELBERT. 1907.

Born October 26, 1886. Entered the Institute from Terre Haute in 1903, and graduated in the Mechanical Engineering Course in 1907. From graduation to the present time with the Fairbanks-Morse Company, Beloit, Wis.

469. MCDANIEL, DONALD. 1907.

Born August 18, 1885, Fort Recovery, Ohio. Entered the Institute from Mount Carmel, Ill., in 1903, and graduated in the Mechanical Engineering Course in 1907. From graduation to the present time with the National Malleable Castings Company, Indianapolis, Ind. Was married April 18, 1908, at Winchester, Ind.

470. MCKENNA, RAYMOND JOSEPH. 1907.

Born September 18, 1883. Entered the Institute from Omaha, Neb., in 1903, and graduated in the Electrical Engineering

Course in 1907. From September, 1907, to April, 1908, in Testing Department of the General Electric Company, Schenectady, N. Y. From April, 1909, to date in the Electrical Department of the Armour Packing Company, South Omaha, Neb.

471. MEYERS, MORRIS. 1907.

Born April 27, 1886, in Russia. Entered the Institute from Louisville, Ky., in 1903, and graduated in the Civil Engineering Course in 1907. From graduation to the present time Draftsman and Computer with the Lorain Steel Company, Johnstown, Pa.

472. MINER, ERWIN JOHN. 1907.

Born June 30, 1885, Le Mars, Iowa. Entered the Institute from Louisville in 1903, and graduated in the Civil Engineering Course in 1907. From graduation to November, 1907, was Assistant on Engineering Corps of Stone & Webster Company, Terre Haute & Western Railway. 1907 in M. of W. Corps Evansville & Terre Haute Railroad Company. 1908 City Engineering Department, Terre Haute. June, 1908, Draftsman for Commissioners of Sewerage, Louisville, Ky. Member Engineers' and Architects' Club, Louisville.

473. NANTZ, FRANK ALEXANDER. 1907.

Born October 17, 1882. Entered the Institute from Glenn, Ind., in 1903, and graduated in Chemistry in 1907. From graduation to the present time Assistant Chemist with the Arkansas Cotton Oil Company, Little Rock, Ark.

474. NICHOLS, JAMES HERBERT. 1907.

Born January 24, 1885. Entered the Institute from Terre Haute in 1902, and graduated in the Mechanical Engineering Course in 1907. In 1907 and 1908 with the Vandalia Railroad Shops, Terre Haute. In 1909 with the Union Pacific Railroad Shops, Omaha, Neb.

475. O'LOUGHLIN, WALTER MARTIN. 1907.

Born May 15, 1885. Entered the Institute from Terre Haute in 1903, and graduated in the Electrical Engineering Course in 1907. From graduation to the present time with the Signal

Department Pennsylvania Railroad at Newcomerstown, Ohio, and now at Pittsburg, Pa.

476. ORR, HARRY HARDIN. 1907.

Born September 16, 1885. Entered the Institute from Louisville, Ky., in 1903, and graduated in the Electrical Engineering Course in 1907. From time of graduation to the present time in the Signal Department of the C. & E. I. Railroad, Chicago, as Signal Inspector.

477. PLEW, WILLIAM REECE. 1907.

Entered the Institute from Palestine, Ill., in 1903, at the age of 24, and graduated in the Civil Engineering Course in 1907. From graduation to date Instructor in Civil Engineering and Mathematics Rose Polytechnic Institute, Terre Haute, Ind.

478. POST, CLIFFORD WILSON. 1907.

Born April 1, 1884, and entered the Institute from Gordon, Ohio, in 1903, graduating in the Electrical Engineering Course in 1907. Since graduation with the Commonwealth Edison Company, Chicago, and at present Treasurer and General Manager Delphos Electric Light and Power Company, Delphos, Ohio.

479. ROUTLEDGE, THOMAS ELMER. 1907.

Born December 14, 1879, and entered the Institute from Newnan, Ill., in 1903, graduating in the Electrical Engineering Course in 1907. Since graduation in the Signal Department Pennsylvania Railroad Company, Mansfield, Ohio, and at present teaching school in Oakland, Ill.

480. SAGE, RUSSELL SANKEY. 1907.

Born May 25, 1885, and entered the Institute from Terre Haute in 1903, graduating in the Electrical Engineering Course in 1907. From graduation to the present time in the Testing Department General Electric Company, Schenectady, N. Y.

481. SCHARPENBERG, CHARLES. 1907.

Born November 19, 1884, and entered the Institute from Girard, Ill., in 1903, graduating in the Civil Engineering Course in 1907. From graduation to the present time Civil Engineer with the Ohio Oil Company, Bridgeport, Ill.

482. SCHOFIELD, ALONZO DEE, JR. 1907.

Born December 3, 1886, and entered the Institute in 1903, graduating in the Mechanical Engineering Course in 1907. From graduation to date Engineer with J. S. Schofield's Sons, Macon, Georgia.

483. SCHUCHARDT, RUDOLPH JOHN. 1907.

Born January 25, 1883, in Terre Haute, and entered the Institute in 1901, graduating in Architecture in 1907. From graduation to the present time with the Dering Coal Company, Danville, Ill.

484. SHICKEL, HARRY MEREDITH. 1907.

Born May 15, 1878. Entered the Institute from Sandford, Ind., in 1903, and graduated in the Mechanical Engineering Course in 1907. From graduation to the present time Teacher of Mathematics in High School, Terre Haute, Ind.

485. SCHICKEL, JAMES BOYD. 1907.

Born April 30, 1883. Entered the Institute from Sandford, Ind., in 1903, and graduated in the Electrical Engineering Course in 1907. From graduation to the present time in the Testing Department General Electric Company, Schenectady, N. Y.

486. STALKER, JAMES ROBINSON. 1907.

Born March 4, 1887, and entered the Institute from Terre Haute in 1903, graduating in the Electrical Engineering Course in 1907. From graduation to date graduate student in Civil Engineering at the University of Illinois, Champaign, Ill.

487. STRECKER, ROBERT. 1907.

Born March 11, 1885. Entered the Institute from Terre Haute in 1903, and graduated in the Civil Engineering Course in 1907. After graduation was with the Engineering Corps of the Evansville & Terre Haute Railway, Evansville, Ind., and at present with Commissioner of Sewerage, Louisville, Ky.

488. TAYLOR, HOWARD C. 1907.

Born January 6, 1886, and entered the Institute from Chapman, Kan., in 1905, graduating in the Electrical Engineering Course in 1907. From graduation to the present time with the Wapakoneta Machine Company, Wapakoneta, Ohio.

489. TRUEBLOOD, CECIL NELSON. 1907.

Born October 27, 1879, and entered the Institute from Terre Haute in 1903, graduating in the Mechanical Engineering Course in 1907. From graduation to the present time with the Signal Department Union Pacific Railway, Sidney, Neb.

490. WHITECOTTON, OTTO GEORGE. 1907.

Born May 13, 1885, and entered the Institute from Terre Haute in 1903, graduating in the Electrical Engineering Course in 1907. From graduation to the present time in the Testing Department General Electric Company, Schenectady, N. Y.

491. WICKLIFFE, PAUL REYNOLDS. 1907.

Born December 6, 1885. Entered the Institute from Greenville, Ky., in 1903, and graduated in the Electrical Engineering Course in 1907. From graduation to the present time with the General Electric Company, Schenectady, N. Y.

492. ANDREWS, CARL BOWERS. 1908.

Born April 17, 1879. Entered the Institute from Honolulu, Hawaii Territory, in 1904. Graduated in the Civil Engineering Course in 1908. With Baldwin & Alexander, Civil Engineers, Honolulu, Hawaii Territory.

493. BERNHARDT, JOHN EDWARD. 1908.

Born May 11, 1887. Entered the Institute from Terre Haute in 1904. Graduated in the Civil Engineering Course in 1908. In 1908 with Libby & Nelson, General Contractors, Minneapolis, Minn. In 1909 in Chief Engineer's office Vandalia Railway, St. Louis, Mo.

494. BOGRAN, DANIEL RAPALO. 1908.

Born January 2, 1881. Entered the Institute from Santa Barbara, Republic of Honduras. Graduated in the Mechanical Engineering Course in 1908. Engineer for Barahona & Canales Company, San Pedro Sula, Honduras.

495. BOYD, HERBERT HENRY. 1908.

Born September 22, 1884. Entered the Institute from Paris, Ill., in 1904. Graduated in the Civil Engineering Course in 1908. With J. D. White & Co., General Contractors, Richfield, Idaho.

496. CANNON, HIRAM BERRY. 1908.

Born November 13, 1886. Entered the Institute from Midway, Ky., in 1904. Graduated in the Electrical Engineering Course in 1908. With Bullock Electric Company, East Norwood, Ohio.

497. CORSON, FLOYD WATSON. 1908.

Born September 21, 1883. Entered the Institute from Genoa, Ill., in 1904. Graduated in the Mechanical Engineering Course in 1908. With the Olds Gas Engine Works, Lansing, Mich.

498. FISCHER, EMIL JOHN. 1908.

Born December 16, 1885. Entered the Institute from Wapakoneta, Ohio, in 1904. Graduated in the Mechanical Engineering Course in 1908. Assistant Manager Wapakoneta Wheel Company, Wapakoneta, Ohio.

499. FREERS, GEORGE HERMAN. 1908.

Born January 21, 1886. Entered the Institute from Terre Haute in 1904. Graduated in the Electrical Engineering Course in 1908. With the Interstate Automobile Company, Muncie, Ind.

500. HAMILTON, PAUL BITNER. 1908.

Born in Terre Haute March 14, 1886, and entered the Institute in 1903. Graduated in Chemistry in 1908. His address at present is Berlin, Germany.

501. HATHAWAY, ARTHUR STAFFORD. 1908.

Born June 26, 1886, and entered the Institute from Terre Haute in 1904. Graduated in the Civil Engineering Course in 1908. With the Southern Power Company, Charlotte, N. C.

502. HEIDENGER, HENRY WILLIAM. 1908.

Born January 9, 1887. Entered the Institute from Terre Haute in 1904. Graduated in the Mechanical Engineering Course in 1908. At present Mechanical Engineer with the Baltimore & Ohio Southwestern Railway, Washington, Ind.

503. HUNLEY, ELIAS BRADFORD. 1908.

Born July 23, 1886, and entered the Institute from Terre Haute in 1904. Graduated in the Civil Engineering Course in 1908. In the Maintenance of Way Department Big Four Railway, Indianapolis, Ind.

504. JACKSON, ROY HAMILTON. 1908.

Born June 11, 1886, and entered the Institute from near the city of Terre Haute in 1904. Graduated in the Civil Engineering Course in 1908. With the Forbes-Foulkes Construction Company on concrete work in Chicago.

505. JOHNSTON, JAY HORACE. 1908.

Born April 11, 1886, and entered the Institute from Bartlesville, Ind. Ter., in 1904. Graduated in the Mechanical Engineering Course in 1908. Is Assistant Superintendent of the Battle Creek Gas Company, Battle Creek, Mich.

506. KELSO, BRYON LYNN. 1908.

Born June 23, 1888. Entered the Institute from Terre Haute in 1904. Graduated in the Civil Engineering Course in 1908. In Engineer Corps Panama Canal Construction, Culebra, Canal Zone.

507. KERRICK, LEO CAPEL. 1908.

Born July 13, 1885. Entered the Institute from Valley Station, Ky., in 1905. Graduated in the Electrical Engineering Course in 1908. With the Louisville Water Works Company, Louisville, Ky.

508. KNOFF, WILLIAM CLEVELAND. 1908.

Born September 13, 1885. Entered the Institute from Louisville, Ky., in 1904. Graduated in the Electrical Engineering Course in 1908. With the Louisville Lighting Company, Louisville, Ky.

509. LAMMERS, CHARLES NEUKOM. 1908.

Born October 5, 1884. Entered the Institute from Terre Haute in 1903, and graduated in the Electrical Engineering Course in 1908. At present in Terre Haute, Ind.

510. LINDEMAN, PAUL GUSTAVE. 1908.

Born in Terre Haute April 14, 1884. Entered the Institute in 1904. Graduated in the Civil Engineering Course in 1908. From graduation with Foulkes & Forbes, Contractors, Terre Haute, Ind.

511. LINDSLEY, BERRIEN McWILLIAMS. 1908.

Born December 28, 1884. Entered the Institute from Dallas, Texas, in 1904. Graduated in the Electrical Engineering Course in 1908. With Munger Automobile Company, Dallas, Texas.

512. McCORMICK, GEORGE TORRENCE. 1908.

Born December 28, 1884. Entered the Institute from Terre Haute in 1902. Graduated in Chemistry in 1908. With the National Cash Register Company, Dayton, Ohio, until March, 1909. Then Chemist with the Kay & Ess Paint and Oil Company, Dayton, Ohio.

513. MITCHELL, SAMUEL EUGENE. 1908.

Born April 30, 1885. Entered the Institute from Butler, Pa., in 1904. Graduated in the Electrical Engineering Course in 1908. From graduation has been Overseer of Stock Farm, Butler, Pa.

514. ORTH, HERBERT DENNY. 1908.

Born September 15, 1885. Entered the Institute from Terre Haute in 1904. Graduated in the Electrical Engineering Course in 1908. Is Instructor in Mechanical Drawing University of Wisconsin, Madison, Wis.

515. REISS, FREDERICK HERMAN. 1908.

Born June 16, 1886. Entered the Institute from Terre Haute in 1904. Graduated in the Electrical Engineering Course in 1908. With the Interstate Automobile Company, Muncie, Ind.

516. ROBBINS, JOHN FREELAND. 1908.

Born August 24, 1884. Entered the Institute from Freelandville, Ind., in 1904. Graduated in the Electrical Engineering Course in 1908. With the Signal Department Vandalia Railway Company, Terre Haute.

517. SCHMIDT, HENRY EARL. 1908.

Born February 15, 1887. Entered the Institute from Terre Haute in 1904. Graduated in Chemistry in 1908. Assistant Chemist Oliver Mining Company, Hibbing, Minn.

518. SIEVERS, CHARLES HENRY. 1908.

Born November 21, 1880. Entered the Institute from Omaha, Neb., in 1903. Graduated in the Civil Engineering Course in 1908. On Construction Work Union Pacific Railway, Greeley, Col.

519. STOCK, ORION LOUIS. 1908.

Born February 22, 1884. Entered the Institute from Lewis, Ind., in 1904. Graduated in the Civil Engineering Course in 1908. Of Paige & Stock, Civil Engineers and Surveyors, Terre Haute. Married November 18, 1908, at Terre Haute.

520. STUBBS, ROSS MALCOLM. 1908.

Born February 1, 1886. Entered the Institute from Terre Haute in 1904. Graduated in the Civil Engineering Course in 1908. His present address is Terre Haute, Ind.

521. TOULSON, WOOD. 1908.

Born June 30, 1883. Entered the Institute from Terre Haute in 1904. Graduated in the Electrical Engineering Course in 1908. His address is Terre Haute, Ind.

522. UHL, WALTER LAWRENCE. 1908.

Born November 6, 1884. Entered the Institute from Portsmouth, Ohio, in 1904. Graduated in the Civil Engineering Course in 1908. With the Chicago, Quincy & Burlington Railway, Lincoln, Neb.

523. WICKERSHAM, ENOCH PAUL. 1908.

Born September 5, 1886. Entered the Institute from Terre Haute in 1903. Graduated in the Mechanical Engineering Course in 1908. With the Grand Rapids Gas Light Company, Grand Rapids, Mich., and the Weston Mott Company, Flint, Mich.

524. WILLISON, WALTER WILLIAM. 1908.

Born April 30, 1886. Entered the Institute from Terre Haute in 1904. Graduated in Chemistry in 1908. With The Larkins Company, Buffalo, N. Y.

525. WOOD, OTTIWELL. 1908.

Born April 18, 1887. Entered the Institute from Terre Haute in 1903. Graduated in Chemistry in 1908. In the Engineering Department Brooklyn Navy Yard, Brooklyn, N. Y.

526. ZAMBRANO, AGUSTIN. 1908.

Born May 7, 1886. Entered the Institute from Monterey, N. L. Mex., in 1904. Graduated in the Civil Engineering Course in 1908. Civil Engineer, Hacienda San Carlos, Coahuila, Mexico.

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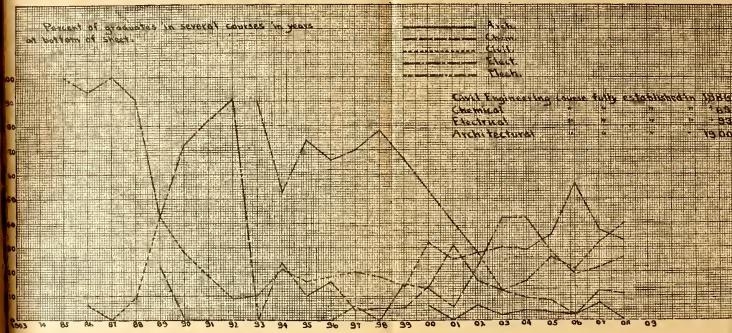
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