ONE of our happiest pursuits through the years has been the collecting of material from all ages on many subjects. It goes without saying that we have tended to lean heavily toward items connected with iron and steel, and the people who have made the history of that industry. It was with this in mind, together with the assurance that we could take as much latitude as we desired, that we readily accepted the invitation which your Program Committee Chairman extended to us.

Long ago we came to agree with Macaulay that "Facts are the mere dross of history. It is from the abstract truth which interpenetrates them and lies latent among them, like gold in the ore, that the mass derives its whole value." In our own words, history is not a matter of cold chronological data or the recitation of a sequence of events. Rather, it is to us the unfolding story of the individuals who, in their own separate ways, have contributed to the creation of the events which the history books record. You will understand, therefore, why our interests have focused on collections of letters and memoranda associated with the actors in history’s drama. When one is able to read the day-by-day accounts of these individuals, and know their plans, their enthusiasms, their doubts and their faith and courage, he comes to realize that here is the vivid and pulsating heart of history.

Perhaps those of us in industry have become increasingly con-
scions of the role of history, in view of the frequent need to
know the factors which stimulated our predecessors to move in one
direction or another. The steel industry is an excellent example
of this, we believe, since it is constantly facing vital questions in
logistics, market locations, demand, and so on. There is no doubt
among the members of the steel industry, and particularly those
in Pittsburgh, that the greatest era of challenge to our industry,
the period which foretold its unsurpassed role in the American
surge into world prominence, was that which enjoyed the leader-
ship of Andrew Carnegie.

It is about Carnegie, therefore, that we should like to talk to
you principally this afternoon. Before doing so, however, we
realize that no discussion of the iron and steel industry of Pitts-
burbg would be complete without mention of its beginning at the
Alliance Furnace, the first blast furnace west of the Allegheny
Mountains. Our personal interest in this subject has often caused
us to lament the paucity of information concerning this initial,
and therefore important, furnace and the men who owned, built,
and operated it. Aside from brief mentions in such works as
Swank's History of the Manufacture of Iron in All Ages, we
were never able to uncover much of significance, until we re-
cently had the pleasure of reviewing a collection of papers com-
prised largely of correspondence among its owners and operators.

Here we found the data for which we had been searching, the
dynamic story, if you will, of the men who pioneered in the initial
production of iron in western Pennsylvania. It is a story which
involves three main characters—William Turnbull, Peter Marmie,
and John Holker who was the principal owner of the furnace.
What kind of men they were and what problems they faced, we
are now in a position to relate.

John Holker, for example, was chosen by the French govern-
ment to come to America early in the Revolutionary War to serve
as an emissary to the embattled colonies. He was a logical choice,

1 James M. Swank, History of Iron in All Ages. American Iron and
Steel Association, 1892.
2 Ibid.
3 This collection consists of twenty-five original letters and memoranda
addressed principally to John Holker by William Turnbull and Peter Mar-
mie. They deal with the construction and operation of the first blast furnace
west of the Alleghenies and also mention noted personalities of the period,
as well as problems peculiar to the times. These materials are now the
property of the Historical Society of Western Pennsylvania.
since his family was in political exile from England, and as a man without a country, so to speak, he quickly adopted America as his own. Within a comparatively short time, he had used his personal wealth to establish business interests in various sections of the colonies, including business partnerships with William Turnbull and Peter Marmie, both in Philadelphia and Pittsburgh.

It was not by accident, of course, that the Alliance Furnace came into being. John Holker knew Pittsburgh and no doubt had great faith in its future. In fact, the Holker Papers reveal that along with Turnbull he had property holdings at the Point which extended as far back as Fourteenth Street. As businessmen, moreover, he and his partners recognized the fact that here, where the Allegheny and Monongahela rivers meet to form the Ohio, there was a ready-made highway reaching all the way to New Orleans. It was the perfect site for the establishment of a business as basic to the needs of eighteenth-century pioneers as was the manufacture of iron.

So it was, therefore, that in 1788 the construction of this first blast furnace was undertaken—a project that was to consume two full years to reach completion. The site chosen, as you know, was on Jacob’s Creek in Fayette County, since it was here that iron ore had been located some eight years previously. William Turnbull, a man of great imagination with a capacity for solving the many problems which could arise in those pioneering days, was in charge of the construction, and it is through his letters to John Holker that we have learned many of the details of the furnace and the trials encountered, both during and after it was built.

For example, it was in a letter from Turnbull to Holker, dated September 24, 1788, that we found the dam and the millrace described, including the costs of construction at eighty pounds for the dam and “three shillings per rod” for the race. It was in this same letter that Turnbull disclosed that it was he who had secured the men needed in the construction work, and he was especially pleased to report that he had found “a very clever man to attend the digging of ore, who will have under his care 12, 15, or 20 hands according as I find I shall be able to comply in making up their wages.”

We wish it were possible to read you many of these Holker letters in their entirety, since a group so concerned with Pennsylvania history would find in them innumerable subjects of interest. They are filled with references to the names so familiar to western Pennsylvania—O'Hara, Neville, Breckinridge, General Butler, Colonel Semple, and others. They tell of incidents in the days of Pittsburgh's infancy, such as the ever-present danger of trouble with the Indians and their defeat of the troops under Governor St. Clair. But of importance at the moment, they reveal the driving spirit of the men who took a wilderness, as the sculptor takes a lump of clay, and shaped a solid base for the iron and steel industry which was to become a principal ingredient in the growth and progress of Pittsburgh and western Pennsylvania.

One might well say that in Turnbull and Marmie and Holker there was established a breed of men that has now become so much a part of our local industry. Turnbull, with his great ability to accomplish the given task, cannot be denied tremendous credit for the part he played in the over-all accomplishment. In modern terminology, he was general superintendent, sales manager, treasurer, purchasing agent, personnel director, chief engineer, and head geologist. He persuaded creditors to delay action. He contracted for the sale of cannon shot to the government forces at Fort Pitt, and his letters reveal a deep understanding of the problems which faced the businessmen of that time. As one example, he gives evidence of the concern with which he and his business contemporaries viewed the Whiskey Rebellion and the effects such an insurrection might have upon commerce. On other occasions he discusses the scarcity of skilled manpower which naturally existed in an area as thinly populated as Jacob's Creek.

Likewise, Peter Marmie, who had once been the private secretary of Lafayette, and who suffered greatly from a variety of physical ailments, saw the Alliance Furnace through almost its entire span of operation. The tremendous competition which the furnace encountered following the turn of the century affected him deeply. You may be familiar with the legend which says that Peter Marmie took his own life by throwing his dog into the

blazing Alliance Furnace and jumping in after him. The Holker Papers demonstrate the important role of documented history in disproving such legends, however, since they contain letters written by Marmie as late as 1814, some ten years or more after the furnace went out of blast.

Despite the comparatively short life of the Alliance Furnace, it paved the way for the great progress which was to follow. We believe it can be said that it served its purpose well and honorably, deserving a place of respect at the beginning of the long and still continuing chronicles of Pittsburgh and the iron and steel industry. In the half-century that followed these efforts by Holker, Turnbull, and Marmie, the iron industry in western Pennsylvania grew rapidly and steadily. Other pioneers pushed the frontiers of America to the west. The menace of Indians melted into the ever-receding forests, and more and more, enterprising individuals found the confluence of the Allegheny and Monongahela rivers a good place to launch a career or a business and help to build a nation. America, at mid-nineteenth century, was no longer an adolescent among the nations of the world. The individuals and groups, from Brook Farm in Massachusetts to New Harmony, Indiana, who had doubted the potential of economic freedom and private enterprise in the early 1800's had been proven false. Despite the impending threat of war between the states, America was ready to grow in earnest, ready to build upon its established industrial base.

It has been said, and correctly, we believe, that only the handiwork of the Almighty could have blessed America with the men of destiny, vision, and genius who were chiefly responsible for the founding of this constitutional republic. The same might be said, as well, for those who came upon the scene in the second half of the nineteenth century, when our nation needed industrial leadership.

At a time when America wanted men of action, men who did not fear the toil of creative work, it was granted Andrew Carnegie with his vision and genius. It is true, of course, that among Carnegie's greatest accomplishments was the building of the Carnegie Steel Company. Under his expert guidance, this company grew from the Kloman brothers' forge in Millvale to an industrial concern in 1900 that stretched from the rich ore fields of Minnesota.

Various sources—the origin of the legend is somewhat obscure and not too well founded.

Some historians have noted that if the Carnegie Steel Company were the only achievement of Andrew Carnegie, it would have been a sufficient contribution to American progress by any standard of measurement. But it is only one monument among many which the passing years have erected to his ability, and it is only one of numerous contributions that he made to the nation and the iron and steel industry of Pittsburgh. We say this because it has been our pleasure in recent years to look back with microscopic eyes, so to speak, upon Carnegie's most productive years, by means of a hitherto unresearched collection of his business papers. Many of these are in his own handwriting, while a large portion of the remainder is in the form of the copybooks so indispensable to businessmen in those days before the development of the typewriter and carbon paper.

Among the miscellaneous papers in this collection, incidentally, is a group of letters which Carnegie wrote to his cousin, George Lauder, Jr., with whom he maintained a close and lifelong relationship. Carnegie wrote this particular group of letters when he was only eighteen years of age, and in them extolls the advantages and benefits of a republic as against a parliamentary form of government. The thinking exemplified in these letters is profound. With a wisdom and knowledge far in advance of his years, he describes the philosophy inherent in our system of government. He gives evidence of a deep understanding of the national and international problems of that day and, of special significance, he discusses with great feeling the freedom of opportunity which was to play so vital a role in his own success.

For the most part, however, the Carnegie collection we have been privileged to organize and study deals with the tremendous volume of business activities in which he engaged. Unlike a diary or an autobiography, it contains no inhibitions, no introspection. It is a straightforward account of one activity after another, and it substantiates the claim that perhaps no other man in the history of American industry was more versatile, more artic-
Manuscript of the first of a series of letters written by Andrew Carnegie at the age of eighteen to his cousin, George Lauder, Jr., in which Carnegie explained the difference between the government of the United States and that of Great Britain.

ulate, more persuasive, or more determined than was Andrew Carnegie. With the equivalent of an eighth-grade education, he came to be considered an equal by the most prominent persons of his time in this nation and the world. Through an insatiable thirst for knowledge, which he readily assimilated and utilized, he mastered every field that he entered.

Perhaps there are no better illustrations of Carnegie's dynamic character, and particularly his versatility, than those found among his papers dealing with the Keystone Bridge Company. This organization, of course, was one of the first of his direct ventures into the iron industry. His early years in railroading had convinced him of the need for a means of bridging America's rivers which would eliminate the hazards and the limited life-span of wooden structures. He began Keystone Bridge, therefore, with great enthusiasm, and the record of that company's accomplishments amply reflects his unfailing drive. It was the Keystone organization that placed the first permanent bridge over the Mis-
souri River at Kansas City—an achievement which Kansas City still considers to be the key factor in its own rise to national prominence. And it was also a Keystone bridge that joined Omaha, Nebraska, and Council Bluffs, Iowa, to form the final link in the first efforts to provide transcontinental railroad transportation.

One particular activity of this company, however, illustrates the broad contribution made by Carnegie, including the manner
in which he could expend great quantities of energy in the interest of national progress and the means by which he drew attention to the steelmaking abilities of Pittsburgh. We refer to the famous Eads Bridge across the Mississippi River at St. Louis. Little mention of Andrew Carnegie's part in the completion of the Eads Bridge is to be found outside his autobiography, and even there, the details are rather sketchy. But we can tell you that the role he played was extensive and indispensable. As early as 1864, as you may know, a group of St. Louis businessmen had undertaken to build the bridge as a private venture under a charter from the United States government. While they had financed the project through subscriptions for stocks and bonds, they had failed to surmount the many obstacles involved, and within a few years, they were in need of a person with wider contacts and greater influence to change ruin into success. Andrew Carnegie proved to be just such a man.

Through an informal association known as A. Carnegie and Associates, which he had formed with J. Edgar Thomson and Thomas A. Scott, Carnegie undertook to extricate the St. Louis
owners from their difficulties. In a confidential letter to Captain Eads, he wrote in October of 1867, "I returned from Philadelphia Sunday Morning—had a lengthy interview with Messrs. Thomson and Scott upon the St. Louis Bridge project. I had no hesitation in stating two points: First, that you had the proper location; second, that you and your associates were the men of St. Louis to whom the Pennsylvania Railroad should adhere. I think you can safely rest in the opinion that these points are admitted by our Philadelphia friends. The only remaining point is as to plan."

And the plan Carnegie also supplied. In rapid succession, he was able to secure an extension of payment on the loans already outstanding on the project, while negotiating an additional and sizable loan for emergency purposes. At the same time, he obtained a contract for Keystone Bridge to erect the superstructure, and for himself he secured the commission to negotiate the sale in London of four million dollars worth of bonds. Most of these transactions, we might add, were carried out in his own handwriting.

Carnegie's enthusiasm in laying the financial groundwork for the eventual construction of the Eads Bridge was exuberant. In a letter to J. Edgar Thomson reporting on the success of the entire bond issue through the banking house of J. S. Morgan, the father of J. P. Morgan, Sr., Carnegie wrote from London, "I have been engaged daily expounding these enterprises to various members of the press, writing prospectuses, and so forth... It grew better daily, but then, you know, I had to make a market by April 20th or lose all. Time means everything."

What this letter fails to express, however, is that only by utilizing his acute faculty for assembling cold facts and presenting them logically and irresistibly was Carnegie able to overcome the skepticism of both the London press and British investors. As a result the Eads Bridge became a reality, and in retrospect its importance has multiplied many times. It opened the West to railroad transportation, a vital factor in our nation's growth through the years. More than this, it marked a giant step forward in engineering progress through its use of such new methods of con-

*From a letter-press copy in A. Carnegie's handwriting.
*From a copy in A. Carnegie's handwriting of a communication sent from London.
struction as cantilevering, and it firmly established steel as a metal with an unlimited potential.

Before leaving the Keystone Bridge Company, we might mention that Carnegie's unswerving faith in the versatility of iron and steel made a contribution to the construction of buildings, quite similar to that made by the Eads Bridge in other engineering areas. The occasion was the Centennial Exposition in Philadelphia in 1876, marking the one hundredth anniversary of American independence. Carnegie was a member of the committee in charge of the construction of the exhibition buildings and vehemently opposed the desire of some of his fellow committee members to construct them of wood. It was his belief that iron and steel should be used instead, and his views prevailed only because of his persistence and persuasiveness, which included contacting members of Congress with whom he was personally acquainted and urging them to lend their support to this type of construction.

While this was not the first application of iron and steel in building construction, it was an excellent means of advertising, as Carnegie had recognized. It is significant, moreover, that before another decade had passed, the use of iron and steel was sweeping the architectural world. The Keystone organization, which had been prominent among the exhibitors at the Philadelphia Exposition, secured the contract to design and fabricate the skeleton for the first steel-frame office building. Beyond this, as everyone in Pittsburgh is aware, Carnegie gave additional proof of his faith in steel through the construction of the Carnegie Building, which until recent years served as one of the principal office buildings of U. S. Steel.

Andrew Carnegie was an invincible salesman of iron and steel not only because of his faith in the versatility of these metals, but also through a complete knowledge of his business, a knowledge that included more than the financial details of the companies involved. Among his business papers, we have found many letters which give evidence of his full comprehension of the technical problems encountered in the production of iron and steel at that time. It was not unusual, also, for him to write the president of a railroad, for example, and describe the operation of new equipment, such as a letter of 1867 where he talked of “our mammoth
This ability to know a business from beginning to end was one of the characteristics that set him apart from other industrial leaders and contributed greatly to his unqualified success. It might be said, as well, that others profited to a very large degree from the vast skill which he possessed and which enabled him to visualize the over-all potential of a business or a product. For instance, it was Carnegie who engineered the merger of several sleeping car companies with which he was associated and those of George Pullman, giving Pullman pre-eminence in that field. In the papers we have reviewed are copies of agreements drawn up by Carnegie, based upon his idea of pooling the patents for these sleeping cars and establishing the Pullman Pacific Sleeping Car Company, a name which Carnegie suggested for this first Pullman organization. Eventually, of course, George Pullman went on to become the dominant figure in the sleeping car business, but we have every reason to believe that it was Andrew Carnegie who made this situation possible.

Another example along these same lines might be mentioned briefly. While Carnegie's early efforts as a telegrapher are well known, his business papers reveal a later association with this industry in the form of the Pacific and Atlantic Telegraph Company. It was through Carnegie that this company was able to erect lines from Pittsburgh to St. Louis and from Pittsburgh to Chicago. Later, however, he became convinced that better service could be extended to telegraph customers if one company were to provide such service. Accordingly, and with his customary thoroughness, he undertook to demonstrate to the officers and stockholders of the Pacific and Atlantic Telegraph Company the advantages of merging with Western Union. Succeeding in this, he then administered from his own office the actual transfer of stock, including that owned by Thomas Mellon of Pittsburgh. The result, of course, was the establishment of Western Union as the principal telegraph company in the nation, and the commissions which he received for his services were turned over to his private secretaries.

What we have been seeking to demonstrate by these few ex-
amples is the tremendous impact which Andrew Carnegie had upon almost every area of the nation during what we have chosen to term "his most productive years." To read his daily correspondence with the businessmen of that time is to realize that here was a man who played a vital role in polishing the many facets of the rough diamond that was American industry in the middle years of the nineteenth century.

His efforts on behalf of the nation's railroads, not only in supplying them with their iron and steel needs, but in masterminding, if you will, the means by which they could secure adequate financing for their explosion-like growth, have been discussed in various publications. His assistance, however, was extended to other areas as well, including his own competitors. Time was a vital factor in supplying the iron and steel that America required, and the Carnegie mills developed such new processes as the hot metal mixer of Captain William Jones and shared them with others. Companion orders were often secured for neighboring mills, and pig metal and coke were supplied to plants in the East and Midwest.

His bridges spanned rivers and valleys throughout the nation, contributing immeasurably to the growth of transportation. Carnegie beams, now well known in the construction industry, gave new strength and dimensions to buildings of every variety, and even the Statue of Liberty and the world-famous Brooklyn Bridge were not completed without utilizing materials produced at the Union Iron Mills here in Pittsburgh. In these and other ways Andrew Carnegie helped to establish a foundation of lasting greatness for the steel industry of Pittsburgh and the nation which it continues to serve with undiminished vigor.

There are some who would say, as they contend of all successful men, that his motives were of the selfish variety. To this we would answer that if he was motivated by selfish desires, they existed only to the extent that he found no greater satisfactions than those inherent in creative effort. His heart indeed was in his work, as his correspondence amply proves. Whether he was engaged in reorganizing the Union Pacific Railroad or drawing upon his experience to advise the Vanderbilt interests in their construction of tunnels for the Southern Pennsylvania Railroad—the same tunnels, incidentally, now used by the Pennsylvania
Turnpike—he gave to each task a depth of vision and a clarity of purpose that remain unchallenged even to this day.

He was able to weld together outstanding organizations of capable men, for the simple reason that his phenomenal capacity to retain and utilize information made him "at home," as the saying goes, in conversation with people in every area of endeavor. He could discuss the intricacies of steel production with his plant managers in the same easy style in which he set forth a complicated financial transaction in his correspondence with the leading financiers of his time. We mention this because we believe it introduces another aspect to the often-mentioned idea that Carnegie had deep faith in his associates. It is our opinion that his recognized ability inspired the men around him to reciprocate that faith. We can tell you from our own industrial experience that this is the true mark of business leadership, and we would place Andrew Carnegie high on the list of those who have demonstrated it with significant results.

In his autobiography, perhaps the most familiar of his published writings, Carnegie made the statement, "Upon trifles do the most momentous consequences hang." After reviewing the papers pertaining to his daily business transactions, we can understand how he came to such a realization in writing of his own life. Many of the incidents which we have mentioned were originally discussed in tones that were quite matter-of-fact. Yet in retrospect their significance and importance assume far greater proportions.

The path from the Alliance Furnace to the modern and efficient steel industry of the Pittsburgh district today extends a considerable distance in terms of the technological progress that has been made. There are some things, however, that time has not changed. In the intervening years, the men who have brought the steel industry to its present magnitude and usefulness had to be the kind of people who were no less resourceful and determined than Turnbull and Marmie. Like Carnegie, they had to possess an enthusiasm for creative endeavor and a faith in the ever-expanding potential of their product. And even more than this, they had to have that steadfast pride in America and the principles of the American way of life which has been the motivating force behind our nation's progress in every area.
To the steel industry of Pittsburgh, and the nation, the advice which Andrew Carnegie wrote to a young engineer three-quarters of a century ago still holds true. "We look for the display of the reserve power of meeting emergencies," Carnegie wrote, "which nature has given to all who make reputations in this world."

It may well be that this is the chief lesson to be learned from a study of the Carnegie era, for no nation, no industry, no community, and no individual can survive the vicissitudes of civilization as we know it without that reserve strength which can carry one through each emergency situation. It is to be hoped that the entire nation may come to know this lesson as thoroughly as it has been known in the past. In such knowledge, we shall write the events of today and tomorrow in as stirring a style as the history which was written yesterday.