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THIRTY VOLUMES

VOLUME TWENTY-SIX

SUCCESS DEPENDS UPON CONGENIALITY OF OCCUPATION. METHODS OF DETERMINING ADAPTABILITY TO A CAREER AND PRACTICAL AIDS IN THE SELECTION OF LIFE WORK. HOW TO READ THE FINGER BOARDS OF SUCCESS

"The power of the laborer must be equal to the power required by his task, or his labor will conquer nothing. Set an ass to carry an elephant's burden and his back will be broken."
J. G. HOLLAND

"One must espouse some pursuit, taking it kindly at heart and with enthusiasm."
A. BRONSON ALCOTT

"Honorable industry always travels the same road with enjoyment and duty, and progress is altogether impossible without it."
SAMUEL SMILES: Self-Help

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VOLUME XXVI

with some fascinating girl. Just as soon as suffering patients begin to wend their way in the direction of his office frequently enough to make him feel that he can feed two mouths, it is a very good plan for him to put the vital question to the girl. To mention one of the least of the advantages of having a wife, a woman's touch in the furnishing and the maintenance of a dentist's office is very valuable. This office, by the way, should have more the semblance of an ordinary parlor or sitting-room than that of some dentists, whose medical paraphernalia is so conspicuous as to give to the timid patient a feeling that he is entering a torture chamber. It is, of course, very desirable that the dentist's instruments and implements be of the most improved pattern, and be sufficient in number not to inconvenience him in his work; yet it is possible, as is often proved by young graduates, to make a start on the equipment which was used during the college course. From this meager outfit, the operator may put in special furnishings which will cost him as high as two thousand dollars. An outlay of four or five hundred dollars, however, should be sufficient for his needs at the outset.

I regard it as a very excellent plan for a young graduate to join whatever dental associations there are within his reach. By this means he is able to keep in close touch with the progress of his profession, to contribute his quota of useful experience to the general fund, and to acquire a broad view of his work, which keeps him out of the rut and gives him an ethical point of view which he probably otherwise would not possess.

But, however well the dentist may love his work, he never should, and rarely does, overlook its pecuniary phases. He should keep his accounts carefully, and if he sends out accurately itemized bills promptly and regularly, he will avoid, in the course of his career, not a little misunderstanding and unpleasantness. At the beginning, at least, he cannot charge high prices, but his work is important, and he should never do it so cheaply as to disturb the standard of charges in his community. A professional man's standard differs from the merchant's in that the only commodity he has to sell is his personal skill and experience, and he must hold this at a proper value. He cannot build up a permanent and satisfactory practice by the bargain system.

Youth is not nearly so much against him in the estimation of patients as it is in the case of the physician. In a year or two after his graduation, he should be making a fairly good income. Dentists in New York City earn on the average about two thousand dollars a year. The yearly incomes of a considerable number amount to ten or twelve thousand dollars, while a few leaders in the profession annually derive from their practice sums in the neighborhood of twenty-five or thirty thousand dollars.

Dental work is more highly compensated in the United States than in other countries, and American dentists have the reputation of being the best in the world. In the matter of studying dentistry, the usual conditions are reversed, and instead of our young men feeling obliged to go abroad to complete their education, foreigners come to this country. In our leading dental colleges are students from all quarters of the globe. They come to us because we are in the lead. Through American progressiveness and inventive faculty we have obtained this position, and it is the duty of the young American dentist to do his share in enabling us to hold it. The fact that he belongs to a body of dentists who lead the world, should inspire him to strive to reach the highest standard in his work.

THE YOUNG MAN IN THE LAW

By FREDERIC R. COUDERT
Ex-President of New York State Bar Association

I KNOW of no rules or set of rules which can be formulated like the provisions of the Constitution of the United States, and which, being followed, necessarily lead to eminence in the law. The elementary conditions which underlie success in every walk of life underlie this. It goes without saying that the aspirant for worldly honors or financial achievement must have intelligence, moral and physical health, and a constitution that will enable him to stand disagreeable friction and frequent disappointment.

Nothing can take the place of a classical four years' course in college in its influence on the aspirant for professional success. Many have succeeded and become leaders of men without the training and culture of a college education. Many others with all the advantages of such an education have passed unnoticed through life. But we are not speaking now of exceptional cases and may overlook both classes. Nature will have her joke at times, and laugh at rules, and scoff at experience, and give sophists a chance to argue and show their wit; but the fact, none the less, remains that the youth who has gone through the course of intellectual gymnastics that a college affords starts in life with an advantage. Those who doubt this may look at our public records, and will find how far the college-bred man is in the lead. In Congress, on the bench, at the bar, he stands out conspicuously. If you consider the small number of college

graduates in the country compared to the whole population and see what proportion they hold of the high positions within the people's gift, you must acquiesce in the general proposition.

Charles Francis Adams, some years ago, spoke of the classical "Shibboleth," as he termed it, with something like a sneer, and almost intimated that he and his forebears had made something of a failure of life by going to and graduating from Harvard. Perhaps they might have done better if they had never studied Virgil or Horace, and had never heard of Demosthenes or Euripides, but on the whole they cannot, one would think, complain of the effects of the "Shibboleth" on their house. Two presidents of the United States, one minister to Great Britain (aye, and a great one), scholars, *littérateurs*, lawyers, four generations, in a word, of conspicuous citizens! If these are the legitimate proofs of Harvard training, may she long continue to pursue the useful tenor of her brilliant way and with her great American sisters continue to develop the latent possibilities in our young men. It is the mission of all of them to do this; not to create but to draw out, to quicken, to strengthen and to adapt what already exists to the purposes of a useful life.

Mr. Brice could not fail to recognize the superiority which a classical training had secured for the bar of our country. "Next after wealth," he says, "education may be taken to be an element or quality on which social standing in a purely democratic country depends. In this respect the bar ranks high. Most lawyers have had a college training and are, by necessity of their employment, persons of some mental ability. In the older towns they, with the leading clergymen, form the intellectual *élite* of the place."

If the young man is to rise as a lawyer, it is essential that he should not be a fool, and it is equally important that he should not be a liar. There is no other profession in the world in which a deserved reputation for truth is so important. Of course, we know that there are many people who delight in their own small witticisms at the expense of the legal profession, their sense of humor being somewhat limited. It certainly is a fact that we do very often make untrue statements, but, be it remembered, those statements are not ours. We are the mouth-pieces of clients who are not lawyers, and who may or may not be truthful. We are bound to accept their statements; we make them as their statements and we endorse them as coming from them. If false, the moral obliquity is to be traced to their consciences, and not to that of an advocate whose function it is to present the facts upon which he relies for success in any given cause, together with the arguments based upon such facts. If the young advocate does not love the truth for itself, and is not self-respecting enough to despise a lie, even if

he can thereby achieve success, he were wise to do from expediency what it were better to do for conscience's sake, or else to go into some other business where he can falsify to his heart's content.

The student must be a persistent reader. If he is fortunate enough to be able to go to a law school, a wise preceptor will solve his doubts as to a choice of books by giving him the intellectual pabulum that will best serve his purpose. If not, he may read Kent and Blackstone, and then re-read them, and, if he has no other books, read them over and over again, together with the most important decisions, federal and state. One good book is worth a dozen mediocre ones. The man of one book, "*homo unius libri*," has proverbially been a dangerous adversary.

The study of the Code of Practice is not of itself, although a useful, an ennobling pursuit. One of the leaders of the bar, many years ago, when the Code had been in existence for half a dozen years, gravely told me that he had discovered that the more a man knew of the Code, the less he knew of anything else. It is fair to say, however, that all the old-fashioned lawyers denounced the Code as an atrocious invasion of their time-honored monopoly, and were extremely reluctant to go to school to David Dudley Field and his colleagues.

Lessons obtained from experiences, even discouraging experiences, are as valuable as school lectures.

As to my first "discouragement," I do not remember what it was, but the most discouraging emotion, and the most exacting as well, is to feel that you have been vanquished by an opponent whose very weakness and incompetence enlisted the favor of the court, and compelled its interference for the sake of justice. A virtually unprotected adversary is a formidable foe. As a young man, I infinitely preferred to encounter an able and experienced lawyer rather than an incompetent, ignorant, and foolish pettifogger. If beaten, the consciousness that I had not been, in common parlance, "kicked by a mule" was comforting.

A lawyer's first case is, relatively, his most important.

My experience, while not thrilling, was unique in its way. A milliner, who spoke no English, sued a lady whose early education had been likewise neglected. The case was tried before Judge Lynch, of the Marine Court, who was an accomplished French scholar; the lawyer on the other side was of French extraction. As I was also familiar with the language, and the witnesses spoke no other, the judge suggested that we try the case in French, thus obviating the need of an interpreter, which we did. It was very pleasant, in a way, because it was novel, and Mr. O'Conor himself could not have done it; but I have never cared to try cases in French since that time, for the milliner got a judgment in her favor, which, after forty years' reflection, I am inclined to think was quite correct. Whether she recovered anything besides a judgment, I

cannot say. I believe that she became my client afterward, and I found her much better in every way than when she insisted on her dues from a dilatory and impecunious customer.

Whether the newly-fledged barrister should at once open an office and boldly challenge fortune, single-handed, under the influence of his own shingle or enlist in the ranks of an established firm in a humble capacity, is a rather debatable question. If he is a man of independent means, with benevolent relatives who are willing to allow him to flesh his maiden sword at their risk and expense, the experiment of a solitary attack upon the community may be made. But, as a rule, he will be willing to drop his pride and begin at the lowest rung of the ladder. Assuming him to be well equipped in the theory of the law, and to have assimilated something from the many books which he has read, he needs experience, above all things, and this he will more readily find in an active office where clients are not looked upon as phenomena, than in the solitude of the unknown and friendless attorney. Virtue is as likely to be found out as crime. If the beginner is diligent and intelligent he will be discovered. Here, as in every other calling, brains and fidelity are indispensable. The opportunity to learn by experience the young lawyer must have; and he runs great risks of not getting it, if, unknown, unheralded, and without conspicuous claims to public notice, he ensconces himself, alone and unmolested, in a brand new office. In this respect he is less fortunate than the young physician, for the latter has in the hospitals, the asylums, the jails, and the reformatories, opportunities to practise on patients whose financial and personal conditions do not permit them to select their advisers. He does not write his first prescription for a millionaire or amputate a limb belonging to a member of Congress. If he fails in his honest efforts to cure, the obscurity of the patient removes all temptation to unkind comment by outsiders. Besides this, he has behind him the careful and skilful experience of the veteran to guide, correct, advise, and help, him. This invaluable experience gives us a corps of young physicians and surgeons as able, probably, as any in the world.

But the young lawyer cannot always get clients even without a fee. He cannot, generally, secure the watchful and kindly supervision of a competent senior. If he breaks down in court or commits a palpable error or loses a manifestly good case, or egregiously blunders, his mortification cannot well be conceived. Sometimes these failures, severe as they are to his pride, are blessings in disguise, for they teach him that Minerva has not filled his cradle with unearned gifts. If he is wise, he may comfort himself with the reflection that the man, lawyer, or layman, who never made a fool of himself, was spared the trouble when he was born.

The question of adopting a special branch of the law sometimes presents itself to the beginner. The adoption of such a branch as patent law, admiralty law, or corporation law, implies a faculty of choice which the young practitioner cannot well exercise. He must first get what he can of the substantial food of life, but in the formation of his menu he has little to do. The president of a rich syndicate or of a mighty corporation will probably not call upon him before his hair is gray. He must go through many a field of battle and prove himself a valiant knight before the highest rewards are brought to his feet. No doubt brave young privates would like to wear the epaulets without waiting for the slow process of time, but alas! there are others in the way. There are stern rules which will not allow untried heroes to be taken at their own measure of value.

It is best, therefore, for a young lawyer to prepare, to some extent at least, for business of every kind. He can be ready, if a sudden and unexpected opportunity arise, to show that he knows something of a special subject with which he has to deal. There is danger, too, in his devoting himself entirely to a specialty — danger of contracting his mind and preventing its due and legitimate expansion. An old-fashioned physician once said that he objected to specialists because they made lop-sided doctors. There is much the same danger in the law.

A taste for mechanics is an excellent ally in the practice of patent law, which is, of all, the most profitable branch of law practice. I recall a lawyer practising in one of the Eastern States who was reputed to have made a large fortune out of a single patent. It was probably true, for his client said to me, whether humorously or not I shall not now undertake to say: "Oh! Mr. So-and-So, my counsel, treated me very liberally. After we got through with our fight, he gave me $250,000." How much he retained I did not inquire. That this should be so is only natural, for a successful patent carries with it profits enough to divide among many associates. Some of them have been gold mines, as the advocates and experts, and frequently the parties themselves, can testify. But there is not much foundation for the superstition that it requires exclusive and persistent study to master the principles of patent law. It will be found that the men who have been most successful owed that success not so much to a mastery of the principles applicable to that kind of litigation, but rather to a thorough understanding of the mechanical and scientific principles involved.

Admiralty law was at one time a fruitful source of litigation and of moderate emolument for the bar, but it has greatly degenerated from its pristine glory since the commerce of the world has been carried by steam. The lovely old cases in which two sailing vessels would run foul of each other, and when bottomry bonds were taken thousands of miles

away, and when ships were not heard of for many months at a time, have passed forever. Besides this, underwriters have contracted a beggarly way of defrauding proctors in admiralty and advocates of their just dues by settling whenever they can; no effort on the part of the rising generation can probably counteract this tendency. Arbitration is the order of the day, and millions of dollars are disposed of every year in the City of New York alone in contests wherein lawyers have no share. I am inclined to believe that the bar itself is responsible to a great extent for this. Enormous charges for ordinary services have alarmed and disgusted clients. "Always keep your client within the squealing point," said an old lawyer who was flourishing when I began,—a lesson which young men should take to heart. They often forget that being dubbed with the title of "counselor-at-law" does not fill them to overflowing with knowledge, as it certainly does not bestow upon them the invaluable gift of experience. They are very apt to kill the goose that lays the golden egg, in their impatience to reach pecuniary independence. Many of them have lived to rue the day and to regret that they had not learned and observed the practice of moderation. Do what they will, the gray-headed hero of a thousand fights must perforce know something that the stripling just out of his teens has not yet acquired. The latter may not believe this, but he will discover it in time.

Every young lawyer ought to have something to do with politics, that is to say, he should entertain an opinion upon the living issues of the day, and should be able, in some measure, at least, to assist the cause which he believes to be just. Not that he should necessarily become a slavish adherent of any one of the political parties, although they are great and efficient instrumentalities, when properly directed, for doing good. A Don Quixote going around with an old-fashioned sword and battle-ax, and no one but his faithful Sancho behind him, will accomplish little, even if the principles that he advocates are entitled to respect and admiration. Political parties must be taken as they are and as representing averages. A soldier will do more fighting with one hundred or one thousand trained men with him than alone. While it may be justifiable at times to cut off from all party affiliation when conscience orders, it is wise, on the whole, for a young man to study the ground carefully and to attach himself to that organization which, in his judgment, will best serve the great, permanent interests of the country.

The hardest lesson for the young lawyer to learn, and one which some older lawyers have never been taught, is that a judge is not necessarily his enemy, a fool, or a knave, because he decides against him.

As to eloquence. The young lawyer naturally desires to be heard and to display whatever eloquence nature may have kindly endowed him with, on all reasonable occasions. This is but natural. After all,

the barrister is the knight of the profession, and has always occupied a place to which his silent brother never could attain, for eloquence is a divine gift. The human voice is the noblest of instruments, and the faculty of swaying a crowd, whether of twelve men or ten thousand, to one's caprice, is the highest with which the Creator has endowed the human being. The real orator is a magician. He may laugh at experience and snub common sense; he may fill the breast of every one of his hearers with his own passions, make them unwilling witnesses of his own prejudices and enslave them to his will. For the moment, they become his puppets and sometimes his instruments. But the real orator is very rare. Counterfeit presentments fill the land, and this fact makes it difficult for the ordinary ear to distinguish between the reality and its imitation. Many claim that eloquence is dying, or is dead, because men are now too intelligent to be swayed by an orator's accents. We might as well say that Paganini, playing on his Stradivarius, could not charm, captivate, and delight his audience, to-day, as he could have done centuries ago. The men of the twentieth century have the same organs, the same passions, the same heart, and the same brain, that they had when Demosthenes denounced Philip, and Cicero pursued Catiline. Eloquence has its value now, and always will have until the constitution of men is changed. Only the circumstances for its exercise must be considered. Eloquence out of place is no eloquence at all. To make the walls of a court-room quake when you are disputing a bill of costs will seem ridiculous. The thunders of the orator should be kept for more serious occasions. But when a human life, or the prospect of a great political party, or the welfare of the nation, is concerned, the orator stands out the master of men.

When I am asked whether the young lawyer should endeavor to be eloquent or impassioned before a jury, or merely state his case and array his facts simply and logically, the answer must be that he had better not try to be eloquent, even where eloquence is necessary, for if he has the divine fire in his breast, it will break out and burn every obstacle strewing its path. He can no more help yielding to the impetus of his own genius than can the newly-fledged pigeon be restrained from flying as soon as his wings are strong enough to bear him.

But he must begin, and he will begin if he is a true orator, by working upon himself. It is only when he is hurried away beyond the bounds of cold and phlegmatic reason that his true powers come into play. As Mr. Hume says, speaking of the ancient orators: "Nay, to consider the matter right they were not deceived by any artifice. The orator, by the force of his own genius and eloquence, first inflamed himself with anger, indignation, pity, sorrow; and then communicated those impetuous movements to his audience."

LAW AS A PART OF BUSINESS EDUCATION

By GENERAL BENJAMIN F. TRACY

MANY men do not feel it necessary to have even a rudimentary knowledge of the legal principles which regulate their business and social activities, though it is self-evident that all men should know something at least of that which has so direct and important a bearing upon their conduct. The words of Pope: "A little learning is a dangerous thing," are particularly true when applied to law, yet all active men and women should undoubtedly possess some degree of legal learning. Many costly and bitter experiences are the result of lack of knowledge of the law. It is a well-known maxim that ignorance of the law excuses no one. Many men have innocently committed illegal acts at the penalty of much trouble and expense, and even at the cost of their lives.

While consequences of infractions of the law are often so serious that no layman should take important action involving legal considerations without the advice of a practicing lawyer, there frequently occur in the course of a business day, exigencies which must be immediately faced, allowing no time for consultation. In these numerous cases, a knowledge of the fundamental legal principles and practices frequently is of great service. Every man who is engaged in some commercial pursuit, should, for example, have a clear idea of what constitutes a contract. Unless he knows that there must be in his contract a consideration on both sides, that no contract is valid which does not involve mutual obligations, he may make mistakes that will cause important transactions to come to naught. He should know also the general legal principles regulating the loaning and borrowing of money and the making of notes. If he is a merchant, he should have knowledge of the law as applied to the buying and selling of goods; if he is engaged in real estate operations he should be familiar with the numerous common law principles and statutory enactments relating to lands and houses; if he is an importer or exporter of commodities, and is identified with the shipping business, or follows the sea in some responsible capacity, a knowledge of maritime law will be very serviceable to him. In short, the activities of every man who is engaged in an occupation are affected by certain laws, an understanding of which will enable him to proceed with much more wisdom and safety than if he were ignorant of these principles.

Yet not a little danger, as I have already indicated, lies in the possession of legal knowledge by the layman. If he depends too much upon

his own comprehension of law, if he attempts to steer his craft through the rocks and shoals and currents of law without the aid and advice of an experienced pilot,—that is, a lawyer,—he courts disaster, and, sooner or later, will run afoul of some legal reef. He would better know nothing of law than not to understand his own limitations and know when to call in his attorney. It has been often and well said that the man who is his own lawyer has a fool for a client. Even a member of the profession calls to his assistance some brother practitioner, when his own private interests are involved.

The possession of a little legal law is like the possession of a revolver; its timely use may be a great protection to a man, while its abuse, on the other hand, may get him into the most serious kind of trouble. But, if he applies, discreetly and carefully, his knowledge of the law, he will not only be relieved of the necessity of employing a lawyer in many instances where one would otherwise be needed, but he will be able to greatly facilitate the work of the lawyer when he is called in. He has an understanding of the salient facts and conditions of his case and is able to bring them clearly and concisely to the attention of his attorney, which is much to the interest of both concerned.

Aside from the purely practical use to which a man's knowledge of law can be put, he derives much mental benefit from its study. Its framework is a symmetrical structure of justice, reason, and common sense, which appeals to every man of normal intellect, and which, in its analysis, trains the mind to accurate and logical thinking. While the law embraces an immense amount of detail, its general principles are based on fundamental human rights and obligations, and constitute, I think, an important branch of general education. Every intelligent man, and woman, too, is given a broader and more comprehensive outlook on life and a better trained mind, both for abstract thought and for practical action, by a year or two devoted to the study of law. They also reach, by this means, a better understanding of the institutions of their country and of their rights and obligations as citizens, and are thus able to fulfill their various civic duties much more intelligently and to lend their influence in the direction of good government. This is particularly advantageous in a nation which, like our own, has a republican form of government.

The benefits of a certain amount of legal knowledge on the part of the layman is becoming more and more generally recognized. Every law class nowadays contains a number of young men who have no expectation of practising law. They are studying it for the sole purpose of adding to their equipment as business men. A large number have found it of great value in commercial careers. Many women, also, study law for the purpose, not of becoming practicing lawyers, but of

gaining accurate knowledge of their legal position and of their property rights before the law. Women of wealth are thus able to manage their own estates with a large degree of independence.

To recapitulate, both men and women are given, by legal study, broader and more completely furnished minds, greater practical ability, clearer ideas of justice, and a better appreciation of the duties of citizenship than are possessed by those to whom law is a sealed book. Therefore, I believe that every young man and woman would be benefited by even a small amount of legal study. To the active mind, the subject is by no means a dull one, built, as it is, upon human effort and the incessant play of passions and desires.

THE SUCCESSFUL LAWYER MUST HAVE A KNOWLEDGE OF BUSINESS

By AUSTIN B. FLETCHER, LL. D.
Of the Bar of New York City

It is frequently stated that law has ceased to be a profession, and has become a business. The statement is extravagant, but contains enough of truth to find ready acceptance with many. The commercial spirit of the age has impressed itself upon everything in it. The lawyer is no exception. He is continually consulted upon the law applying to business transactions and situations, and, if he is to give the best advice, he must thoroughly understand that to which the law is to be applied. To be qualified for this, one must have a keen business instinct, and this should be supplemented by a commercial experience. The latter may be obtained by any one, but the former is as much a gift of the gods as oratory or poetry, either of which may be improved by study and exercise, but can never reach the dignity of true success unless it is implanted in one's nature. A lawyer possessing the highest business instinct, a calm, well-balanced judgment, and the ability to quickly grasp the situation, is to-day more sought than the great advocate; and if the making of money, that last infirmity of noble minds, is an indication of the measure of success, he is the most successful in his profession.

Ninety-five per cent. of those who enter upon the practice of the law would probably have done much better if they had chosen a different kind of work. Not more than five per cent. attain a genuine success, in

accomplishment or reward. No one should enter any of the learned professions because he believes it offers large pecuniary promise. The various mercantile and allied pursuits present far greater inducements in this direction. If one prefers the law to any other occupation, he possesses one of the elements of success in taking it up. He should next be certain that he has sufficient stamina to hold the moral rudder true, for there is no profession or business vocation which requires a keener moral sense and greater strength of character than the practice of the law. Some of his clients who criticize the acts of others and the legal profession generally, will probably be the first to openly or guardedly request him to do that which all men know to be dishonorable, or unlawful. The day is approaching when the law schools will as carefully examine into a candidate's moral antecedents, condition, and tendencies, as into his mental ability. He should next have the broadest general and legal education that his circumstances will permit him to obtain. The race is not to the swift, and no time is so well spent as that given to a thorough and careful preparation.

To the information gathered from books and schools, should be added a thorough knowledge of accounts, the general principles of business, rules of trade, commercial usages, and methods.

The attainment of the above will require the best efforts of a young man until he is nearly thirty years of age, but at forty he will have far outstripped those who hurried through their preparation and began practice at twenty-one, and succeeding years will continue to widen the difference between them.

To lawyers of this class falls the management of large estates, involving the investment and care of vast sums. They become directors in banks, trust companies, and business corporations, in which their knowledge of the law, together with their acquaintance with business principles and methods, gives them an advantageous position.

Many lawyers in our largest cities have given up the general practice of their profession, and have become the legal and business heads of some of the most important corporations. Instances can readily be given by any well-informed lawyer of members of his profession, who, because they combine a knowledge of the law with a thorough knowledge of business principles, have been taken into partnership in some of the largest banking houses in the world; elected to the presidency of the greatest financial institutions, with remuneration commensurate with their responsibilities; placed in charge of railroad systems with a salary of $100,000 per year, which is largely increased by the opportunities for advantageous investment; or who have been given the management of estates of many millions, upon the income of which they receive ten per cent, which rapidly leads on to fortune. Not one of these positions is

obtained or held because of an intimate knowledge of the law alone, but because the holder has also a business experience and capacity that entitles him to all that he receives. Such opportunities and demands will continue to increase, and the lawyer who will be most sought is he who has also a practical knowledge of business principles.

A simple instance may be given illustrating a greater necessity for business foresight than knowledge of the law. The lawyer has trust funds to manage. His first desire is that the investment shall be safe, and next that it shall earn a fair rate of interest. Government, state, and municipal bonds return from about three per cent. to less than two per cent., which renders them unsatisfactory in many instances. First mortgages on improved real estate pay from four per cent. to five per cent., and are a favorite investment. The drawing of the mortgage and the strictly legal work connected with the instrument is a very simple matter, but the business judgment necessary in examining the property is far more important. Most mortgagors in our large cities are real estate speculators, and, desiring to borrow as much as possible, will resort to all means to accomplish that end. The lender must rely upon his own judgment, and very many conditions and circumstances enter into its formation.

The bond is not to be considered, for the bondsman is almost invariably a dummy who is paid ten dollars for his trouble, and is entirely irresponsible; and even if he was responsible when he signed the bond, he might not be when the mortgage became due. The lender has nothing to look to for payment but the value of the property. The loan is usually for three or five years, and it is even more important to know what the property will be worth when the mortgage expires than it is when the application for the loan is made. The value of property in some localities in New York City has within five years fallen from twenty to forty per cent. If new business property is being examined, the question of whether it is well adapted for its purposes must be considered: does it meet modern requirements; is it too good or not good enough? Either may prove fatal to its success. Will the locality continue as a business center, or will trade move away? If it is an apartment house, it is necessary to consider whether the class for which it was built will continue to live in the vicinity; or will it change? Surroundings, objectionable features, and people, and numerous other considerations all enter into the question of the loan, and are vastly more difficult to dispose of than the mere legal examination of the title and the drawing and execution of the mortgage.

Men of important affairs are too busy to follow details. They present the skeleton of a proposed contract to their attorney with the remark: "These are the main features, put it into proper form, and see

that I am fully protected." The successful lawyer must catch the spiri of the contract, furnish the details, and supply omissions.

Business methods, conditions, and influences are continually chang ing; questions arise which have no precedent, vast interests are involved and mistakes are expensive. If advice is to be valuable these must be understood. The craze for the indiscriminate combination of business enterprises during recent years, with the clumsy and unbusiness-like methods pursued, the result of bad advice, poor judgment, and the desire for speculative gain, has laid the foundation for years of employ ment for the thoughtful lawyer with keen business capacity, who will be called upon to reorganize and correct the mistakes that have been made. Many other instances can be readily supplied. A business instinct and experience is always desirable, regardless of the nature of one's practice, and is absolutely necessary for success in most branches of the law.

THE YOUNG MAN AND METROPOLITAN JOURNALISM

By ALLAN FORMAN
Editor of "The Journalist"

ROBERT J. BURDETTE once said that no young man should go into journalism unless he was sure that he had "a call," to do so. "Unless he would rather be a newspaper man and live on cold hash than in some other profession and have pie" was the way he put it. "And," he added, "if the young man has such a call he may get the pie as a newspaper man." This is undoubtedly true. The pecuniary rewards of journalism are absurdly small as compared with those of the other liberal profcssions, and prizes are few and far between. The newspaper writer who can earn more than one hundred and fifty dollars a week in his profession is rare; indeed, the editor, who is not also an owner, who gets a salary of fifteen or twenty thousand dollars a year may be looked upon as a freak or an accident. Yet the physician whose fee for a single operation runs up into the thousands, or the lawyer who earns a like amount from a single case, is by no means rare. The newspaper man must find a large part of his reward in the pleasure of his work, in the mental stimulus of constant production, and in the close contact with men and affairs into which he is thrown. He rarely becomes a rich man, as wealth is

NOTICE.

HOW TO OPEN A BOOK.

From "Modern Bookbinding."

d the book with its back on a smooth or
ed table; let the front board down, then
ther, holding the leaves in one hand while
pen a few leaves at the back, then a few at
ront, and so on, alternately opening back
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hree times and you will obtain the best re-
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'A connoisseur many years ago, an excellent
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our bindings open!' I almost fainted. He
ad broken the back of the volume and it had to
e rebound."

reckoned, and rarely leaves any lasting reputation. His work is for to-day; to-morrow it is forgotten. The days of the editorial giants have passed. Greeley, Raymond, the elder Bennett, who was that rare combination, an editor and publisher, Charles A. Dana, and Joseph Medill are gone; Henry Watterson, St. Clair McKelway, and one or two more, are about the only men in the country who impress their personality upon their papers, who can write editorials of over a column in length which will be read to the end, who are really "great editors" in the accepted meaning of the term.

The journalism of to-day is the journalism of sensation. It is not the man who can write a clear, logical, convincing analysis of a question of public interest, but the editor who can originate the most *outré* assignments, who can send one reporter to a fever ship in quarantine, another to a lunatic asylum, and a third to fall off a ferryboat in order to describe the sensations of drowning, or who can invent the most sensational headlines, whose services are in the greatest demand. As a veteran said to me not long ago: "The papers want a man with a brain capable of conceiving ideas so crazy that no one else has ever thought of them, and with assurance enough to carry them out." This is especially true of the larger papers in the larger cities. The country press still preserves some measure of dignity and sanity. Yet I am not enough of a pessimist to regard this striving after sensationalism as permanent. It seems to me, rather, that we are in a transition state, from which good may come. If our papers tumble over each other in their mad search for six-legged calves and freaks and horrors of all sorts, they, at the same time, give us a news service which was never attained, or seemed possible, in the days of the "great editors." Correspondents are sent to every nook and corner of the globe to gather the latest news of every event. That this news is not always strictly accurate, is more often the fault of the editor than the correspondent, a fact which is proved by the sensational headlines which are placed over the most unimportant dispatches.

I believe that the day will come when the public will tire of this hysterical sensationalism and will demand sober, straightforward statements of fact, uncolored by prejudice. The very men who are most guilty in the matter, who conduct the papers which go farthest in the race for sensationalism, are tired of their work and admit a contempt for the papers they get out and for the public which buys them.

Again, the young men going into journalism to-day are better educated and better bred than the journalists of twenty years ago. Many of the "great editors" left the common school and went direct to the "case" and made their way to the top, absorbing such education as they could on the way. To-day, at least in the larger cities, the college graduate is in the majority. Time was when the journalist was distin-

guished by his unshorn hair and unwashed linen. Now he is rather better dressed and more carefully groomed than the average young man of equal earning capacity. It was not so many years ago that two young men were appointed members of the Reception Committee at several successive entertainments of the New York Press Club, because they were about the only two members who owned dress suits and knew how to wear them. To-day, a Press Club dinner looks like a gathering of financial magnates, except that as a rule the newspaper men are rather better looking. With this improvement in the *personnel* of the profession, it is but reasonable to look for an improvement in the papers themselves. With the largely increased earning capacity of the great papers, it may be hoped that salaries may be increased.

As I have said, the material rewards of journalism are insignificant as compared with those of other professions, the work is infinitely more wearing, and there is no assured future to be bought by age, experience, and hard work. The lawyer or the doctor is, each year, adding to his reputation — which is his capital — and, if he is reasonably able and successful, position and competence come with gray hairs. The journalist starts in fresh from college, and in a very few years, if he is clever, he reaches his maximum earning capacity. As his hair begins to whiten he becomes less and less in request until, finally, at an age when the lawyer or the doctor is at the zenith of his powers, the journalist is crowded into the background by younger men. In no other profession is the "has been" so pathetically in evidence as in newspaper work. Newspaper districts are crowded with competent, industrious men on the shady side of fifty, who have occupied prominent positions and earned large salaries in their time, who are glad to do any work, however trivial, for fifteen or twenty dollars a week. They have not been brought to this pass by dissipation, though the temptations offered in newspaper work are very great. They are simply "back numbers," whose brains have lost the vigor and agility of youth, and they are of no more use than the back numbers of the papers they formerly edited. A lesson which newspaper men never seem to learn is that journalism takes out of a man the best that is in him before he is sixty, and that he must provide for the future in the days of his prosperity if he would avoid a miserable old age.

This may seem a very pessimistic view of the situation, especially to the youngster just out of college, who enters journalism with high hopes, his eye on an editorial chair ensconced in an air-castle which takes the form of one of the few fifteen or twenty-thousand-dollar prizes; but, as I have said, truth compels the statement that the chief rewards of journalism come from the work itself. To many young men the idea of becoming a newspaper man is especially fascinating. There is a free and easy existence, sometimes called "Bohemianism," which at first

charms. In addition, there are unlimited theater tickets, the acquaintance of interesting men and women, constant variety, and, compared to other professions, immediate financial returns.

The young lawyer must go through law school and wait for clients; the young doctor, after his years of special training in the medical college and the hospital, has weary years before he can hope to build up a practice; but the young journalist needs only a fair knowledge, a pencil, and a sheet of paper, to begin earning money. He is in constant association with bright men who stimulate him, and, above all, he feels the possession of a certain power and influence, which he can hope to attain only after years of hard work in other professions. He daily addresses an audience larger than he could hope to reach in any other way. If he is earnest and conscientious, he enjoys using his potentialities for doing good, righting wrongs, and being of use to the community; and this is fascinating. It is all very attractive, and even if he is well in the harness before he discovers that between the bottom of the ladder and the top, the middle rungs are crowded with a solid mass of mediocrity which it seems hopeless to push through and impossible to climb over, he feels sanguine that some fortunate circumstance will enable him to jump above it, and is therefore happy.

To become a successful journalist, one requires education, ability to write, instinct for news, indefatigable industry, and a physique which can endure irregular hours and hard work. One also must have a disposition so sanguine and hopeful that no disappointments can affect it; must be encouraged by every little success and not be downcast by a succession of failures; must enjoy to the full every triumph and only be spurred to greater effort by reverses. To such a nature, journalism is the most satisfying and fascinating vocation possible for man, and such a candidate is bound to succeed.

Hardly a week passes that I do not receive a number of letters from young men asking my advice and begging me to secure positions for them. I have written plainly because I know that, unless a man is especially fitted by nature and disposition to become a journalist, it is the most unsatisfactory profession he can embrace. For me to attempt to paint a rose-colored picture of the pleasures and rewards of journalistic work would be not only grossly dishonest, but grossly unfair to such of my readers as might be considering the advisability of becoming newspaper men. I will venture to assert that there is not a successful working journalist to-day who would not have been richer — gained more of the material rewards of labor — had he turned his talents and hard work in some other direction; though I am equally sure that not one of them would have had as pleasant and satisfactory a life had his labor been in more profitable but less congenial lines.

JOURNALISM AND THE SORT OF CAREER IT OFFERS

By HENRY WATTERSON
Editor Louisville "Courier-Journal"

(INTERVIEW)

THE newspaper is passing through a period of transition. The old order of partisan journalism, sometimes very brilliantly written, has yielded to the journalism of the extraneous and sensational order, conducted for the most part by robust, ill-educated men, working under pressure, and too often under more or less venal direction and ulterior motive. There is lacking in many cases a proper pride in vocation, such as we find in what are called the learned professions. Thorough-going self-respect, thorough-going sense of responsibility, and thorough-going love of truth for truth's sake, are wanting; and, on every side, we see levity and slovenliness culminating in chronic inaccuracy and occasional malevolence. The little papers copy the big ones, and the result is that the history of yesterday is ill-told and full of error, having little method, and perfectly illustrating Dr. Rush's famous description of the press as "that vehicle of disjointed thought."

While this has become a general condition, there are happily many exceptions to it among newspapers, and the number of such papers is growing steadily. The time will come when newspaper proprietors will very generally accept the truth that integrity is the first principle of journalistic success, disinterestedness the second, and cleanliness the third.

The word integrity needs no explanation. By disinterestedness I mean entire absence of personal considerations in newspaper editing. The growth of political ambition in an editor, for example, is the measure of his loss of influence in editorial work. A newspaper, to reach a high plane of usefulness, must have behind it a man who sincerely believes that his paramount editorial duty is to the public. I do not mean by this that the newspaper should set itself to remove all abuses or to reform the world. It should not attempt the impossible; but it can print the truth. This should be its primary aim.

We often hear of conflict in a newspaper establishment between the editorial office and the counting-room. In the latter is undoubtedly

located the helm of the journalistic craft, for a newspaper is, first of all, a business institution. But, just as a vessel can be steered better and made to reach her destination more quickly if the sails are so rigged as to have free play and catch all the breeze, a newspaper can attain a sure and permanent place in the public regard by the unhampered expression of honest and sensible conviction. If a newspaper's business principles are wholly honorable, they need not conflict in the slightest degree with the principles upstairs. It goes without saying that a newspaper's purposes should be above reproach. Putting the matter on the low ground of policy alone, it may be stated with certainty that dirty money never pays.

Publishers will see in time,—many of them have long seen,—that what you call the counting-room influence will not only coöperate with honest editorial intentions, but will compel them. If the editor be not a proprietor, exercising original jurisdiction, it will pay those who employ him to give him plenary power and to permit him to consider the character of his work from the standpoint of public as well as personal accountability. The departmental system should be extended and amplified. Each bureau should have a competent and reliable head. Proofs of the whole should pass through responsible hands before going to press. In my opinion, this will be the rule of the future newspaper, and, as it becomes so, will journalism become no less a learned profession than medicine or the law. There is no reason why a man of high ambition and scholarship should not be an excellent journalist, starting at the bottom, and climbing through the various stages of the work to the top. There are, of course, men of this stamp now in the field, but to attract them in large numbers, there must be surer work and better pay, and there ought to be a pension system.

In journalism, as in war, young men achieve the real feats. There ought to be provisions for the meritorious old men. I wonder that some movement to establish a home for disabled and veteran newspaper men has never been inaugurated. Such an institution is greatly needed. Mr. Carnegie, for example, could not divert a fraction of his spare millions to a better or more far-reaching purpose. Every year many men who have long buffeted the waves of the journalistic rapids become exhausted and sink, to be seen no more. They are not necessarily dead. They have simply made so long a journey that their aging legs are tired and can no longer hold the pace; so, like exhausted soldiers, they drop by the wayside. A few journalists have made widespread reputations and are remembered in their graves; a vast majority, even most of those whose names have reached the public ear, are forgotten before they die. This is because a newspaper man's yesterdays are of slight avail to him. What he has done in the past counts for little in weighing his services of

to-day. His reputation does not, by a cumulative process, become a substantial structure like that of the lawyer or physician, upon which the latter may rest comfortably when his days of activity are over. Every morning the newspaper man in the ranks must begin anew. As the years pass he finds that he cannot begin with quite the old vim and energy. His employers, likewise, make this discovery, and he is superseded by younger men. At an age when a toiler in another vineyard may be enjoying the fruits of his long labor, the average newspaper man is superannuated. Like Othello, his occupation's gone, and he is unfitted for any other.

I have heard it said that newspaper experience is an excellent training for business or for a profession like the law. This, I think, is far from the truth. The newspaper man acquires, through his work, a good deal of knowledge, usually superficial, of men and things; he becomes "worldly wise," but, while the minds of men in more stable occupations are receiving a most essential discipline, the newspaper worker's mental development is usually along lines which are far from disciplinary. He bows to no authority, and acquires an unsystematic and irregular mode of life. The lawyer must accept and shape his course by the decisions of the court; the doctor must often yield to the conditions of patients; the merchant must study to please his customers. Their freedom of thought and action is restricted in a much greater degree than is that of the newspaper man. When the latter attempts to do similar work he speedily comes to a painful realization of this fact. He is impatient of unaccustomed barriers, and usually scores a failure.

From what I have said, it may be inferred that I do not advise a young man to go into newspaper work under present conditions. None of my three sons is a journalist. But, after all, the question as to whether a youth shall enter the newspaper field depends largely upon the youth. Some men are born for the work, and to advise them to take up another calling would be both futile and foolish. But the generality of newspaper workers cannot have special and distinguishing gifts for journalism. Any success which may come to the latter must be achieved by dint of hard and careful work, and it is most decidedly to their interests that the conditions in the newspaper field become more stable and regular, that journalism as a profession be put upon a firmer basis. There can, of course, never be such discipline in newspaper work as in the army, in banking, or in any business conducted according to a fixed system during hours of daylight. But there need not be so much of Bohemianism, and in the future I think there will not be. Certain it is that no employment offers greater premium to regularity and self-control, and imposes deadlier penalties upon carelessness and intemperance.

A newspaper worker in the town or small city is more likely to "pursue the even tenor of his way" than is the young man on the staff of a great city paper. Position is surer, competition is less fierce, and life generally is less strenuous in the smaller communities. While no man can be sure of what he may and may not be able to accomplish under the developing influences of urgent and exacting circumstances, it is safer and better for one who does not feel that he possesses unusual ability to remain in a quiet town, as a newspaper worker, than to embark on the tempestuous sea of journalism in a great city. This is particularly true if he be a man with a family and finds his chief pleasure in a tranquil, domestic life. But if he is of restless spirit, always craving for new fields to conquer, new obstacles to surmount, and feels stirring within him a superabundance of energy that can find no adequate outlet in the humdrum work on the home paper, he may as well attempt metropolitan journalism, for he will never be content until he does. The chances are, of course, that he will never rise above the crowd, and in this case his life will be much harder and less satisfactory than if he had remained in the quiet town. On the other hand, he may possess the marked journalistic ability which will be recognized nowhere so quickly as in the great center, and he may attain a position that will give him a broader, more active, and more influential life than could ever have been his in the home town. But this question must be solved, like that other as to whether a young man shall enter journalism, solely on the circumstances of the individual case.

A man of brilliant talents and sterling character cannot, after all, conceal himself from view. Whether in the city or in the country, he will become conspicuous, and in the degree that he is an independent man, his own master, he will be both loved and hated. The good or evil of such a man depends, not upon the particular locality in which he lives, but upon his purposes in life and the use he makes of the opportunities which are sure to come to him.

The basis of success in journalism are good habits, good sense, and good feeling, a good education, particularly in the English branches, and application both constant and cheerful. All success is, of course, relative. Good and ill fortune play a certain part in the life of every man. If Hoche or Moreau had lived, either might have made the subsequent career of Napoleon impossible. But honest, tireless, painstaking assiduity, may conquer ill fortune, as it will certainly advance good fortune. In the degree that a man adds to these essentials large talents,— special training, breadth of mind, and reach of vision,— his flight will be higher.

THE AUTHOR AND THE PUBLISHER

Representative Opinions and Practical Advice to Young Authors from William Dean Howells, Edgar Fawcett, Amelia E. Barr, the late Charles Dudley Warner, Winston Churchill, Edwin Markham, Louise Chandler Moulton, James Whitcomb Riley, Edward S. Ellis, Beatrice Harraden, Anthony Hope, W. Clark Russell, Ella Wheeler Wilcox, and Many Well-known Publishers

WILLIAM DEAN HOWELLS

THE chances for success in literature are brighter to-day than ever before. The young man or young woman who wishes to take up a literary career has many more opportunities to place his work before the public now than he had a few years ago. There are more publishers and more magazines than there used to be, and all of these are on the lookout for new talent and fresh ideas. Because a writer is unknown to the publisher is no longer a reason for his manuscript being rejected without consideration; in fact, if anything, it is even more carefully considered on this very account. Editors and publishers take a certain pride in bringing out new authors; they like to be the means of discovering hitherto unsuspected genius. A glance over the authors' names in any publisher's list of books will bear this statement out. Many a writer who occupies a prominent place in these catalogues was wholly unknown a year or two ago. It will also be noticed that many, in fact most, of the very successful books of to-day were written by new authors.

Competition in authorship is just as keen as it is in any trade or business, and those who would make literature their profession must have something new and interesting to say. There are many writers struggling for a foothold on the ladder of success, and it requires originality, talent, and an ability to persevere, to secure a high place upon it. Possessing these qualities and an irresistible desire to express the thoughts that are in him, a writer will usually get his work published, and thus have the opportunity to test the public's appreciation of what he has to say. If, after thus safely passing through the ordeal of editorial judgment, a work is found by the public to be new and original, it will be heartily welcomed and have a large sale.

The novel, the poem, and the juvenile story are the three forms of literature most attractive to a young writer, and therefore it will be inter-

esting to see what the most prominent authors in these directions have to say to those who would win success in their particular lines.

W. D. Howells, the best-known American novelist, when asked what suggestions he would give to fiction writers, said:—

"In the first place, the young man or young woman who wishes to be a novelist should have a natural aptitude for writing, and a love for the work. Then he or she should have all the education possible to secure. A college training is not by any means absolutely necessary, although it certainly is desirable. The fact that about two-thirds of the American and English authors have not attended college, shows that a writer may win success without the benefits that a university education affords. Every young author must work, work as hard as he can, and persistently strive for recognition.

"The new writer, in these days, has no difficulty in getting his work to the attention of the publishers. All he has to do is to submit it, and if it is presented in proper form he can be assured that it will receive consideration. He can either offer it himself or put it in the hands of a literary agent to submit it for him.

"An author should by all means make a specialty of a certain class or classes of work and should make himself proficient along those lines. If a novel writer, he should confine himself to the kind of fiction he prefers and therefore can write best.

"Serial publication of a novel before its appearance in book form is of great advantage to an author, for, unless it is a very successful story, he can get ten times as much money for the serial rights as will be realized from the sale of the book.

"Some authors dictate their stories to a stenographer, but, as a general rule, I do not think they can do as good work in this way.

"In conclusion, I would say that the new writer's chances for succeeding in his chosen work are very much brighter to-day than they ever were before, because there are more markets for his wares, and, therefore, more opportunities for him to make himself heard."

Edgar Fawcett is another veteran novelist, and from him we may gain much practical counsel:—

"A young man or woman who desires to join the multitudinous ranks of our present story-tellers, should, in the first place, gird himself with an indefatigable patience. I remember, when quite a young man, finding it so difficult to embody a short magazine story in just the language and mode of narration I wanted, that the entire summer had passed before I wrote *finis* to my work. There is no use in supposing that flexibility, fluency, and economy of phrase will come without copious and incessant practice. Meditation is vitally important to the most permanent quality of letters, and it is doubtful whether any real masterpiece was ever produced without it.

"Next, I should counsel the young author to select a story worth the telling. I do not mean by this an elaborate, or even ingenious 'plot.' Such plans of story-writing have very justly gone out of favor, except among readers of a rather vulgar and ignorant kind. The result that should be aimed at, however, is a dramatic and interesting combination of events, brought about by the influences of the various characters and personalities, one upon another,— a tale springing out of what the *dramatis personæ* really do and are, and not one which reads as if the author had thought of his incidents first and afterward tried to make certain fictitious human beings fit them. I should advise, too, being realistic wherever you can, and at the same time avoid triviality. Some of the modern novelist's finest effects are produced by a simple, severe realism. But remember that, while fact is truth, truth is not by any means always mere fact. I think imagination and passion the two highest and finest equipments that a novelist can possess; and if the constructive, creative imagination be absent from any story-teller, there is that something lacking in him which places him among the ranks of inferior artists."

Mrs. Amelia E. Barr, in telling of how she came to take up the profession of literature, drops some excellent hints for the aspiring novelist. "Though I had written stories to please my children, and many things to please myself," she says, "it had never occurred to me that money could be made by writing. The late William Libbey, a man of singular wisdom and kindness, first made me understand that my brain and hands were security for a good living. From my first effort, I began to gather in the harvest of all my years of study and reading and private writing. There is this peculiarity about writing,— if, in any direction, it has merit, it will certainly find a market.

"For fifteen years I wrote short stories, poems, editorials, and articles on every conceivable subject, from discussions of Herbert Spencer's theories to descriptions of gentlemen's walking-sticks. To every piece of work, however, if it were only ten lines, I brought the best of my knowledge and ability; and so earned, with a great deal of pleasure, a very good living. During the earlier years of this time I worked and read, on an average, fifteen hours a day; for I knew that to make good work, I must constantly have fresh material; must keep up to date in style and method; and must therefore read far more than I wrote. But I have been an omnivorous reader all my life long, and no changes, no cares of home and children, have ever interfered with this mental necessity. In the most unlikely places I looked for books and found them. The fifteen years spent in writing for the monthly periodicals gave me the widest opportunities for information. I had an alcove in the Astor Library, and I practically lived in it. I slept and ate at home, but I lived in the City of Books. I was in the prime of life, but neither soci-

ety, amusements, nor pleasures of any kind could draw me away from the source of all my happiness and profit.

"Suddenly, after this long novitiate, I received a 'call' for a different work. I had an accident which confined me to my room, and which I knew, would keep me from active work for some months. I fretted for my work, as dry wood frets an inch from the flame, and said: 'I shall lose all I have gained; I shall fall behind in the race; all these things are against me.' They were all for me. A little story, of what seemed exceptional merit, had been laid away, in the hope that I might, some day, find time to extend it into a novel. A prisoner in my chair, I finished the book in six weeks, and sent it to a publisher On Thanksgiving morning a letter was received from the publishers, accepting the book; it can be imagined what a happy Thanksgiving Day that was. This book was 'Jan Vedder's Wife,' and its great and immediate success indicated to me the work I was at length ready for. I was then in my fifty-second year, and every year had been a preparation for the work I have since pursued. I went out from that sick-room sure of my 'vocation,' with a confidence founded on the certainty of my equipment, and a determination to trust humanity, and take my readers only into green pastures and ways of purity and heroism. I ventured on my new path as a novelist."

The late Charles Dudley Warner believed in the value of newspaper work in the earlier training of a novelist. He said: —

"A few years' work on a daily newspaper forms the best training for a writer. By it the young man or woman gets very close to the world. It becomes possible to know what people of all classes are thinking about, and how they look at things. A newspaper reporter should make his every story the very best he is capable of writing, so that each will be at least a little better than the one that went before it. He should write with the same care he would exercise if he were writing something to which he was to sign his name. Meantime, outside reading must not be omitted by him, for it is very important. Newspaper work is likely to produce very harmful results, unless there is a flow of light from the best writers constantly illuminating the mind of the young reporter. If he is working in a large city, where schools and colleges are available, he should seek to study in one of them. Thus he will have a practiced hand to guide his reading.

"As to rules for writing, the best one I have ever known is this: Never write anything, if possible to avoid it, in the same way it has been done before. Shun hackneyed phrases. If a writer sticks to this, he is very soon likely to have a style of his own."

"I have always regretted that I have had no experience in practical journalism," says Winston Churchill. "Experience gained in that profes-

sion is invaluable to a man desirous of following a literary career. It creates and develops qualities that are essential to literary effort."

There is not so much encouragement for the writer of poetry in these days as there is for the writer in prose of any kind. Still, a real poet will be listened to, and his message will be heard, despite the obstacles in his path.

Edwin Markham, who, by his "Man with the Hoe" and numerous other very striking poems, has become the most successful of our poets, was good enough to contribute the following information and suggestions for those who write poetry: —

"The statement that a poet is born and not made is only partly true; he must be both born and made. That is to say, he must come into the world with a certain fineness and tension in his structure; and then he must have a certain training to bring him into the possession of his powers.

"Perhaps nothing is more important to the poet than a passionate heart, and a far-seeing eye. He must have both fervor and insight. He must have a feeling for Nature in all her moods and mysteries, together with a passion for humanity in all its sorrows and aspirations.

"The ordinary scholastic education may be helpful or harmful to the poet, all depending upon the spirit of his teachers. If they are dull formalists, if they deal only in the shells and shards of knowledge, they may chill the generous currents of his soul. If, on the other hand, they are alert, knowing that the universe is alive, and that God is momentarily present in the movements of nature and history, then they may help to awaken the poet's soul. The cold prose mind can neither understand nor instruct the warm lyric mind.

"After the verse-writer has assured himself that he has poetic feeling and expression, there is still, usually, a toilsome road before him to popular success. He must have the long purpose, and the strength to live unheard. In fact, to my mind, a poet has not in him the precious stuff of a great soul if he is much disturbed by lack of fame or fortune.

"To make himself heard, the poet must not be an imitator; he must strike out a new path. This does not mean that he should use archaic words and fantastic meters, but that he should give some fresh insight into life; a fresh sense of the mystery and wonder that surround the existence of man.

"After having done all this, it remains only to give his work to the world, in whatever way he can, and then to trust to the just apportionments of time.

"The kind of poetry that seems to be successful now is the sort that has always been successful — poetry weighted with passionate thought, and lit by the hues of the imagination."

Mrs. Louise Chandler Moulton has some encouraging words for the young poet.

"I think," says she, "that editors and publishers are always glad to get the work of new writers; provided, of course, it is good. For

instance, speaking on this subject, one of the most distinguished editors I know once said to me: 'Granted that two poems are absolutely equal in merit, we would rather have the poem of the new writer than that of the one who has been a long time before the public.' I believe, other things being equal, a young writer has the better chance, for he is just beginning to build up a reputation, and publishers like to have the credit as well as the profit of introducing new writers to the public."

James Whitcomb Riley, another successful poet, has these excellent suggestions to make on the prime requisites of success in literature: —

"The most essential factor is persistence — the determination never to allow your energy or enthusiasm to be dampened by the discouragements that must inevitably come. I believe that he is richer for the battle with the world, in any vocation, who has great determination and little talent, rather than his seemingly more fortunate brother with great talent but little determination.

"Many persons have spoken to me about Kipling's work, and remarked how wonderful a thing is the fact that such achievements could have been possible for a man comparatively so young. I say, not at all. What do we find when we investigate? Simply that Kipling began working on a newspaper when he was only thirteen years of age, and he has been toiling ever since. So, you see, even that case, when we get at the inner facts, confirms my theory, that every man must be 'tried in the fire,' as it were. He may begin early or late, and in some cases the fight is longer than in others, but of one thing I feel sure, — that there is no short-cut to permanent, self-satisfying success in literature, or anything else."

Writing for young people presents ample prospects for success to those who can learn to do good work of this kind. The competition is not so keen as it is in other directions, and, although the market is comparatively limited, first-class books for boys and girls are always wanted. One of the best-known writers of juvenile stories, Edward S. Ellis, has given us his views on the subject, and they will be found of value to those who contemplate writing for boys.

"As long as there are boys in the world," he says, "the right kind of boys' books will always be popular. Publishers pay well for stories that are clean, healthful, and natural. Boys love to read of adventure, and though the incidents may sometimes tread close to the improbable, they should never cross the line. Above all, they should inculcate manliness, truthfulness, obedience, and respect for those in authority. The Golden Rule should be the basis of all books for the young. I have no patience with the 'smart' boy who disobeys his teacher, deceives his parents, and plays mean tricks on his associates. It is as true of literature as of the

drama, that stories which tend to make boys better have a more lasting popularity than those of the opposite tendency. Of course, they should not be namby-pamby, milk-and-water dispositions, but the needful lessons should be taught by the incidents themselves. The author who has ability to meet these requirements is always sure of a good publisher and a big clientele."

Having seen what some of our successful authors have to say to their fellow-workers on the profession of authorship, let us turn to the publishers and learn how they look at it from their standpoint.

F. N. Doubleday, of Doubleday, Page & Co., when asked about the chances for young writers with the publishers, the kind of matter wanted, the terms of payment, and so on, said: —

"We are always glad to examine the work of unknown authors, and it is given very careful consideration. Every manuscript submitted to us, whether it is from an unknown or well-known hand, is examined by at least two readers. If it does not possess the qualities that in our opinion make for success — and these I should say are originality, good English, sincerity, and common sense — it is sent back. But should it seem to the two readers to be worth more consideration, it is handed to other readers, often four or five being called upon to pass judgment upon it. If it is considered favorably by all these critics and accepted, an arrangement is made with the author by which he is paid a royalty on every copy of the book sold, and this is usually ten per cent. of the retail price.

"It is difficult to say just what kind of novels are most in demand now. The taste of the reading public varies. Fiction of all kinds is in great demand, and next to that, good books on nature study are wanted. Works of travel formerly had a good sale, but they are not so popular now. Volumes of poems have very slight chances for success, and few publishers will risk their money upon them, for the reason that they do not sell. Only one book of poems during the past five years has had anything like a large sale, and that is 'The Man with the Hoe.'

"All manuscripts submitted to a publisher should be typewritten and made in every way thoroughly presentable. We dislike bad manuscripts. A soap manufacturer puts up his wares as attractively as possible, — why should an author send out his work in its most unpleasing form?"

A representative of D. Appleton & Co., who have brought out a number of new writers recently, made the following statement: —

"Historical fiction has been for some time in great demand, but this class of novel has probably been rather overdone, and descriptions of actual life seem likely to be taken up now. Aside from fiction, the kind of literature most likely to be successful at present is, roughly speaking, popular instructive books. Works of travel have not the vogue they had some years ago, and publishers do not care as much to handle them as they formerly did. Books of poetry are what is called 'a drug in the market,' for the reason

that they rarely sell. Kipling's 'The Seven Seas' is a shining exception to this. This volume of verse had a very large sale and continues to be most successful."

Pursuing the course of securing opinions directly from the publishers, the writer called next on Henry Holt & Co. "When we receive a manuscript," said a representative, "the usual course is to give it preliminary examination in order to learn if it is worthy of further consideration. If it seems to have merit, then it is passed on to special 'readers' for further examination and criticism. A manuscript is often read by three or four 'readers.' If the preponderance of opinions be decidedly in favor of publication, arrangements follow for bringing it out.

"It is difficult to describe just what a manuscript must be in order to make it acceptable, but, if it is deeply interesting and of good literary quality, the publisher is glad to secure it.

"The majority of manuscripts are published on the royalty basis. If a book proves successful, this is better for the author than outright purchase.

"Good novels are at present the best selling books. There are fashions in these as in other things. We have had the 'character study' novel, the 'romantic' novel, and, lately, the 'historical' novel, and it seems to be about time for another change.

"Outside of fiction, biographies and letters are selling as well as anything else of late. Books of travel are not, perhaps, as popular as formerly."

From conversations with other publishers, much additional information that will be of interest and value to the yet unknown author was gleaned. One publisher told of the number of copies of a novel that are usually issued as a first edition. He said that when the author is well known, or has a certain following of readers, his publishers could, without any risk, print a large edition; but when the writer has not yet made a reputation, only about 1,500 copies are brought out at first. If these sell, another edition of the same number is issued, and, if the sale continues, other and larger editions are printed according to the demand.

When asked how he accounted for the phenomenal sale of some novels, he said: "This is usually traced to something outside the merits of the book itself. Timeliness is generally the real secret. Current events or a public fad or mood in which a novel just fits will assert. If an author who can write fiction could only foretell the public mood, there would be no doubt about the great success of his book if he wrote it to fit that mood. Still, the best work is not done in this way. The only really good literature is that which comes from an author's brain spontaneously, gushes forth because it is there and must come out with-

out regard to whether it will please or displease the public. If it is strong, original, and possesses real merit, it will be successful, even if it does not strike a passing fad, for good work pays well, although it may not have an abnormal sale."

Another publisher gave some information in regard to the terms of payment for accepted books. He said that the ten per cent. royalty plan is sometimes misunderstood; while the writer of a $1.50 book gets fifteen cents, the publisher has to sell the book to the wholesale dealer at forty per cent. off the regular price, or ninety cents,—in some cases fifty per cent. is given. Then, when the cost of composition, engraving, press-work, paper, and binding are reckoned, it will often be found that the publisher receives in profit little, if any, more than is paid the author as royalty.

In addition to the two methods already mentioned, a publisher will sometimes bring out a book at the author's expense. When this is done, instead of the publisher paying the author a percentage of sales, the latter pays a commission for the use of the publisher's name and his facilities for putting the book on the market. It is erroneously supposed by many persons that a publisher is willing to issue any book, no matter what its character or quality, if the author will assume all the risks. Reputable publishers, whose imprint is of any value, are jealous of their reputations, and will not attach their names to a book that they do not think worthy of publication.

Of the different publishing arrangements, the best for the author is the royalty plan. He should never allow himself to part with his copyright by selling his work outright.

Beatrice Harraden did this, and she has uttered a note of warning to other writers, to retain the copyright of their books. Through ignorance of publishing methods, she sold her novel, "Ships That Pass in the Night," outright to an English firm, who paid her twenty guineas down, and later, because of the success of the book, eighty guineas more, making, altogether, one hundred guineas. For the German edition she received $100; and in this country, where the book was pirated everywhere, as there was no copyright here, she was able to secure only $150, which one publisher paid her in order to announce his edition as authorized. Thus, she received about $800 for a novel of which half a million copies were sold, while, if she had retained the copyright in her hands, she would have made something like fifty times as much.

It is always well for a fiction writer to first try his hand at the short story. There is always a good demand for work of this kind, and if the author can make some reputation in this way it will add materially to the chances of his novel being accepted. The short story, however, is

not easy to write. Some authors who have tried both say that it is more difficult than the composition of a novel.

In writing the short story, the first requirement is that it have a motive — a plot; then that this plot be worked out consistently and in an attractive style. The story must have a definite purpose, a definite aim, and whatever this is, whether it is to depict a certain character, describe a particular incident, or recount a strange adventure, everything must bend to this, lead up to it, help to enforce it, and all that does not bear upon it must be left out.

The style in which the controlling idea is presented, and the attractiveness of the picture shown in its unfolding, have fully as much bearing on the success of the short story as the cleverness of the plot.

The style may be strong and vigorous, or tender and sweet. It should reflect the author's individuality. The young writer should read all he can of the work of those who have gained success in this direction, note carefully their methods of expression, and search for the cause of the subtle, indefinable charm that pervades their stories. This will train his mind in the meaning and proper use of words. Then he should proceed to employ this knowledge in his own way, letting his individuality assert itself in the formation of a style of his own. He should express himself in a simple, straightforward way. There should be no striving after effect. If he knows just what he wants to say, and it is struggling within him for expression, he should let it flow freely, naturally, from his mind. Arlo Bates says: "Style is the personal impress which the writer inevitably sets upon his production. It is the expression of one man's individuality, as sure and as unique as the sound of his voice, the look from his eye, or the imprint of his thumb."

The characters in a short story are of the utmost importance, for it is what is called human interest that is most attractive to the general reader. The one, two, or three personages who figure most prominently in the story should be so drawn as to make them appear real, alive, with distinct personalities, so that the reader shall feel that he can see them and thus have his sympathies enlisted in their fortunes and misfortunes. In order to create this interest and sympathy in a character, the author should not go into minute detailed descriptions of him, but should rather let him reveal his personality in his actions and conversations.

For proper artistic effect, the length of the short story depends entirely upon the story itself, and it should have no more words, nor any less, than are actually required in its presentation. But from a commercial standpoint, that is, the standpoint of salability, it should be between 1,000 and 4,000 words. The editors of the magazines want their stories very short and those that come within this length have a much better chance of acceptance than have longer ones.

The prices paid by the magazines for short stories and serials vary greatly. Some will pay as low as four dollars a thousand words and others as high as twenty dollars per thousand, while there are some that pay from twenty-five dollars to one hundred dollars for a story, regardless of the number of words it contains, provided it falls within their limits, the amount depending upon its value to them.

When the young author is able to write short stories that are found worthy of a place in the magazines, he then can turn his attention to the more ambitious novel, and this will come easier to him for his training with the shorter form. In writing his novel he should, as far as possible, bring out strongly its dramatic possibilities, in order to make it available for publication as a serial before its appearance in book form, for the reason that, if it is accepted by both a magazine and a publisher, he will receive payments from two sources, and, as Mr. Howells says, he is likely to get ten times as much for the serial rights as he will realize from the sale of the book.

In the longer story, the relative importance of the style and plot are, to a certain extent, reversed. Anthony Hope says: —

"In my style of literature, the ability to invent a plot is the first requisite of success. Style is excellent; it can be acquired, I think, but it is absolutely useless without plot, and this is a natural gift. To have something to say is the first thing. Many people can say it. Some writers have a good style, but no merit of thought. Some have something to say; and, even if they say it poorly, it brings them success."

In the novel, the characters are of as much, if not more, importance than in the short story. They should appear real, not only to the readers, but to the author. He must become wrapped up in them, and allow them to work out their own destiny without any apparent help from the writer. Mrs. Burton Harrison says: —

"In writing a story, the characters govern me, not I the characters. I may have the outline and ending of a book in my mind, but the characters take everything into their hands, and walk independently through the pages. I have always found it best to obey. The ending of 'Anglo-Maniacs,' which caused so much adverse criticism, was not as I had planned. I was helpless under the caprices of the characters. At first, I was displeased with the ending; but now, looking back upon it, I am well satisfied. If I did not believe in my characters I would be unable to write; for the time being I am living and observing a dozen lives."

Owen Wister, a writer of stories of ranch life, is another who confesses to the hold the characters take upon him when he writes.

W. Clarke Russell, who wrote from life and observation, got the idea for his book, "The Wreck of the Grosvenor," from what he saw at a

trial of some sailors who had mutinied because of the bad food supplied them. The men were sent to jail for terms ranging from three to five weeks.

"When I came away from the magistrate's court, after hearing the men sentenced," says Mr. Russell, "I found my mind full of that crew's grievance. I reflected upon how much of the hidden parts of sea life remained to be exposed to the public eye, to the advantage of the sailor, providing the subject should be dealt with in a romance. I found I must import the machinery of the petticoat. The pannikin of rum I proposed to offer must be palatable enough to tempt the lips of ladies to sip it. My publishers would want a market, and if they would have none of me I should write in vain; for assuredly I was not going to find a public among sailors. Sailors don't read; a good many of them can't read. Those who can, have little leisure, and they do not care to fill up their spare hours with yarns of a calling which eighty out of every hundred of them loathe. So I schemed out a nautical romance which should have a definite purpose and still appeal to the general public. In two months and a week I finished the story of 'The Wreck of the Grosvenor.'"

When a manuscript is finished and ready for placing on the market, the author should either turn it over for disposal to a literary agent, who makes it his business to know what is wanted and where it is wanted, or make a careful study, on his own account, of the style of serial stories used in the various magazines and the character of books issued by the different publishers, so as to learn as nearly as possible to which magazine or publishing house his manuscript is most adapted. In this way the time and annoyance of offering it at places where it would not be at all suitable are saved.

But there are scores of cases where great successes have been made from books that were rejected by numerous publishers. "David Harum," "Mr. Barnes of New York," "The Wreck of the Grosvenor," "The Wide, Wide World," "King Solomon's Mines," "Sartor Resartus," and "Archibald Malmaison" are examples of this.

Ella Wheeler Wilcox says of rejected manuscripts: —

"Many a successful short story or poem passes through the reading department of a half dozen magazines and weeklies without having its merits discovered until a seventh editor accepts it. Poems of my own, which have later met with much favor from the public, I have seen return with a dejected and dog-eared air, from eight or nine offices, whither they had gone forth, like Noah's dove, seeking for a resting place. A charming bit of verse, written by a friend of mine, took twenty-one journeys from the maternal hand to the editor's table before it found an appreciative purchaser."

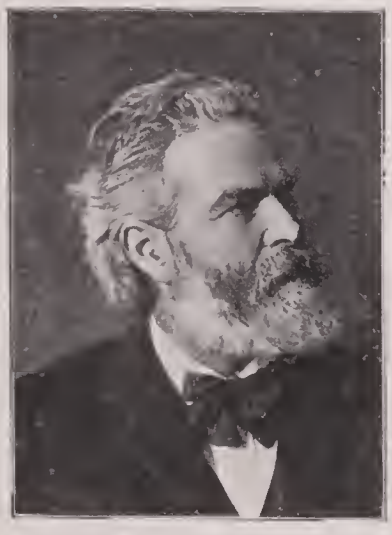
Whenever a manuscript comes back, it should be read over carefully to see if the cause of its rejection can be discovered in some inconsistency previously overlooked. Hall Caine revised his book, "The Shadow of a Crime," after each refusal. At last the verdict was "magnificent," but even then the *dénouement* had to be changed. "'If you kill that man Ralph, you'll kill your book,' I was told. So I rewrote the conclusion, and the story was accepted as a serial."

From what we have said, and from the statements of prominent authors and publishers, it will be seen that young men and young women have excellent opportunities for successful literary careers, if they have anything new to say and will cultivate their talents by careful reading, study, and observation.

POETRY, AND WHAT THERE IS IN AMERICA FOR THE POET

By EDWIN MARKHAM

I



CERTAIN critics are saying that poetry is doomed to perish, to be sponged out by the hand of science. As well say that poetry will obliterate science, for each stands on its own ground, separate and secure, coequal, eternal, like Jungfrau and Matterhorn. Others, again, are saying that the world of poetry has been exhausted by the poets themselves—that nothing new is left to see or to say. But this, too, is an idle word.

When Homer had given Troy to flame and immortality, no doubt there were those who said: "Poetry can no farther go." But after Homer was Æschylus, who came with gorgeous tragedy and sceptered pall; Dante, who journeyed the laborious way from the Infernal Pit up to the Rose of the Blessed; Shakespeare, who disclosed to us the long, sad, glad procession of humanity.

And who shall say that a fellow of these, if not a greater, shall not yet appear? Humanity is infinite, nature inexhaustible; the world is still young, wonderful, unfathomable. In spite of the searchlight of science, life is still veiled in immense mystery. Who has uttered all the secret of the sea; all the confidences of the stately, still, primeval woods? Who has given us all the youth and wonder of the morning? Who has

pillaged all the flaming beauty of the sunset? And has not the heart of man grown yet deeper, more unsearchable, with the process of the suns! Shall poetry perish? No; we have had as yet but the first few golden syllables of the inexhaustible Song of Life — the song from which the worlds arose.

II

But who is the poet, the man who comes speaking some syllable of this mighty song? Certainly he is not a mere molder of golden meters and sugared rhymes; "a pleader of lovely and pleasant causes, nothing perilous." No; if he is a poet worth while he enters with serious steps the chambers and gardens of the Muses. In his loftier moods, his words may well be said to be oracular, prophetic. In the youth of the world he appeared to his people as the impassioned seer. Religion, in the Vedas, the Eddas, the Scriptures, descended as a song, as a poetic vision of the Creative Man.

How far away from this august ideal of the poet is that cheap conception of him as a dexterous *dilettante*, a dainty ornament of the drawing-room, a picturesque lounger in a tavern, a dreamy idler mooning on a bank of violets. Yes; in his true function, he is one of the substantial forces in the world-movement; as essential to the growth and glory of a people as is a blossom to the pomegranate.

Of course, it is not alone this bard of prophecy and protest for whom there is need and place. There is room for the homely near-by poet, also, with his humbler ministries — for the lark or the wren that nests near the ground, as for the eagle clinging to the crag or circling to the sun.

So delicate, so daring, so elusive a craftsman as the poet can be described only imperfectly, and then only by use of many changing metaphors. The poet is a dweller between two worlds, the Seen and the Unseen, and he beholds objects and events in their large outlines. He never rests with the sensual, the apparent. He frees us from the tyranny of the moment. His mission is an eternal quest for the absolute reality and veracity behind the veil of the senses. The Fact needs the Ideal to give it genuine reality, as the body needs the soul. The ideal completes the fact, giving to it a new and larger reality. The fact is always a liar: it needs to be seen in full circle, as fact is only part of truth. The poet's device is that deep saying written upon an ancient page: "We look not at the things which are seen and temporal, but at the things which are not seen and eternal."

To the poet, then, the world is not substance but symbol. Therefore, he is forever pressing on through the shows of things to the significant,

the permanent, the universal behind them. He ignores the mere shell and gives us the spirit and splendor. So his report is truer than history and deeper than science. A page of Homer gives us a deeper insight into Greek life than do a hundred pages of Grote. A canto of Dante gives us more of the heart of "the ten silent centuries" than do long chapters of Buckle. Symonds offers us many volumes on the Renaissance; but some brief monologue of Browning, perhaps, will give us more of its real essence, its spiritual aspiration, its clogging carnality. "Of all the writers under the sun," says bold Sir Philip Sidney, "the poet is the least a liar!"

It is indeed good fortune for us that the poet comes with power to open paths for our feet into the lofty places of the Ideal. For by these paths we escape from the hard monotony of our daily lives, from the iron despotism of the actual. Indeed, the ideal is more real and urgent than the fact, more essential to the needs of the soul. And the ideal must be preserved, even at the cost of martyrdom. When it perishes, the home will shrivel to a house, the grave to a pit, the nation to a horde. The poet's work, then, pulsing as it does with the ideal, is as practical as seed-sowing and house-building. What Novalis says of philosophy can well be applied to poetry: "She can bake no bread, but she can procure for us God, freedom, and immortality!"

So it is that the poet, dwelling on exalted heights, comes to judge the world as it is, in the light of the world as it ought to be; comes to infuse into the hearts of men the lofty courage of life; to create for their consolation and joy that nobler, "wilder beauty than earth supplies." So he gives us his "Tintern Abbey," his "Oberman Once More," his "Rabbi Ben Ezra," his "Men of England," his "Locksley Hall," his "Parable," his "Eve of Revolution"— poems that face the tragic facts of life, and help to build up the hope of the world. The poet is forever chastening our souls with a strange beauty, forever disturbing our easy optimism with a bugle of battle. He sends a noble discontent,— a divine impatience,— the impatience of the acorn to be an oak. Into the world of the Imperfect, he sends not peace but a sword — a sword bathed in heaven. He points away from the selfish, ephemeral concerns to the eternal concerns, thunders his averments that to be something is more than to get something; that to make a life is more than to make a living; that to be just, to be brotherly, are the highest interests of practical men.

III

But where can the poet find the stuff of song? Does he need the great personage, the great spectacle, the great event? No; even simple things are great to the cunning listener and the far-looker. There is

poetry in the commonplace and the near-by, if one goes deep enough to find it. The lines of all things, seen under the revealing light of the imagination, run out into infinite orbits. All things somewhere touch infinity. To the seer no life is common or empty. To him the meanest life may come freighted with tragedy, with pathos, with beauty. The broken figure of an old woman leaning wearily against a wall may carry more import to the poet's eye than the pageant of a dead queen borne in purple to her sepulcher. To the poet the world is forever young, forever strange, forever springing up out of the abyss of wonder and mystery and silence. It is necessary only to look steadily, with the eyes of the heart, at any thing, for that thing to grow significant and impressive.

It all depends upon the soul that surveys. The genius, the man with the seeing eye, finds field for his powers in any nation, any epoch. The shallow mind is always waiting for a great crisis upon which to spend itself — "the woes of Thebes or Pelops's line." The discerning man sees the great in the little, the uncommon in the commonplace, the abiding in the fugitive. To Keats, a moldered urn calls up an hour of buried Hellas to live immortally in the memory of man. To Blake, a fly upon the leaf touches him with kindling sympathy and sends upon his heart a vision of the oneness and the wonder of all life. To Lowell, the aimless circling of the gold-fish in the globe calls forth a lyric scripture on the meaning and the mystery of existence.

IV

While it is true that the material of the poet is everywhere, still in our America there is an especial affluence for a noble poetry. The field, however, is not wholly virgin : a stray sickle from time to time has already touched the edges, from the sterile hour of Mistress Anne Bradstreet down to the greatening hour of Louise Chandler Moulton and Edith Thomas. We are clear of that old, weary time of artificial, second-hand, ready-made landscape, warmed-over emotion, and sucked-out philosophy. Our poets no longer walk by the Merrimac and the Charles to gather English primroses and hawthorne, or to listen to Philomel and the skylark! At last our poets have discovered America! The Rhodora, the dandelion, the wild poppy, now glow through their meters; the blue-bird, the bobolink, the mock-bird, now carol through their rhymes.

But not only have we flower and bird to tempt the poet's heart, but we have also beauties and glories, myriad and marvelous — mountains, rivers, lakes, forests, stretching a thousand leagues away — America . . . home! The mere vastness of our land appeals to the imagina-

tive passion. All the spaces and faces of our country, like the ideas of our people, have the large outline, the limitless sweep.

Our Niagaras, our Sierras, our Yosemites, our inland seas, our tragic deserts, our starless swamps, the tremendous journey of our Mississippi, the eternal thunder of our Oregon, the illimitable stretches of our prairies, the twilight silences of our primeval forests — from these must come our "As You Like It," our "Ode to a Skylark," our "Sunrise Hymn to Chamouni." And not all the leagues of Europe, from Land's End to the Golden Horn; not all the leagues of Asia, from Ararat to Fujiyama afford so white a field for a harvest of the Muses.

Of course we are not bereft of poets who have seen some of these larger grandeurs of our land and framed them into song. We have Emerson's "Monadnock," Lanier's "Marshes of Glynn." Hamlin Garland has sung the prairies; Joaquin Miller, the Sundown Seas. But there are yet long reaches of land and water and sky untouched by song. They await the hour when some poet with a splendid word shall give them to man and to immortal memory.

It is the poets of the Old World who have cast the color of romance upon the yellow Tiber, the blue Danube, the brooks of Vallombrosa; who have irradiated the dark pines of Pelion and Ossa; and to the Ægean given a lyric fame that shall endure —

"Till glory and song and story and all things cease."

It is the poet who has given immortality to the towers of Notre Dame, the arches of the Colosseum, the dungeons of Chillon. And it is the poet who must give to the beloved paths and places of America a fadeless charm, a fair eternity.

V

And our people, they too are unique and picturesque, made of the mixings of all the tribes of men. As they will gather at the last trump in the Valley of Jehoshaphat, so they are gathered here — Caucasian, Malay, African, Mongolian; men from Moses's land, Homer's land, Dante's land, Goethe's land; from the land of Omar, of Cervantes, of Hugo, of Ibsen, of Turgenieff.

This blending of many nations into one new nation gives a fresh impulse to literature, a new basis for poetry. From this massing and adjusting and inbrothering, spring new activities and audacities of the soul; new purposes, new perils. Out of this melting pot of the race, with its traditions, its superstitions, its nobilities, its vulgarities, its seething potentialities of good and evil, must come an organic unity — a new type of man. And it is the flame and hammer of imagination that must accomplish this mighty mixing and molding. Through the power of

imagination God made and poised the worlds. Through the power of it, men and nations are banded and held in social unities. It was imagination that shaped and held together that stupendous dream of the Middle Ages — the Holy Roman Empire. It was imagination, fired by poet and fed by tradition, that fused England into a solid wall that has held against time for nearly a thousand years. And it is the imagination that must shape the plastic clay of our commonwealth into a stuff that will endure the chances and changes of time.

Great, then, is the opportunity — shall I say the duty? — of the poet of democracy. The old nations are partly held to solidarity by the iron bands of custom and heredity, by the pressure of ages. But, in the Old-World sense, we have no custom, no heredity. We must be held in oneness by the power of the Idea — the idea of progress and fraternity. Let the American poet hold aloft that great Idea, till we shall feel that we are not only compatriots but also brothers — that we are conscripts of one heroic hope, comrades of one destiny.

America furnishes to the poet the inspiration of great achievement. She holds now high place in the constellation of nations; she has snatched secret powers from the forces of nature; she is on her way to vast victories in the markets of the world. It is to the poet that we must look for an interpretation of the glories of our stronger Carthage, our greater Tyre. It is he who will throw upon our patent office reports, our census returns, our ledger accounts, and our enlarging maps, some light from the ideal; who will speak the spiritual significance of events. It is he who in the perils of our prosperity must keep alive in the people a faith in the unworldly enterprise, "the unprofitable risk."

Our America lacks one source of poetry — a shadowy antiquity; the shrines, ruins, and memories, of a long-reaching, fateful, and pathetic past.

As a nation we are only in the youth of things. It was but yesterday, as run the calends of time, that we set our adventurous faces toward the western wilderness. It was but yesterday that the little brigs of England folded weary wings at Plymouth Rock, and the caravels of Spain went blundering up the coast of the Californias. Brief as our past is, it nevertheless holds men and events worthy of song and story. Thus far we have an epic of the Indian, a genial rhyme for the Yankee, a pastoral for the Puritan, a dithyrambic for the *Camerado*. But there wait unsung many an idyl and epic of the home-making of the Pioneer, of the gold-seeking of the Argonaut, of the passing of the Spaniard, of the chaining and the unchaining of the African.

But, if America has no spacious past, she has a spacious future. She has a Messianic mission to the nations of the earth. What poet's heart can fail to believe that she has been reserved to these later ages by the

Higher Power for some vast purpose, some transcendent manifestation? Here certainly is to be worked out the highest freedom that the world has ever known.

So Democracy comes as the supreme fact of the century. But the rise of the democratic spirit has sent new impulses, new accents, on all art. We are beginning to see the significance in the common and human. The sabot is pushing aside the purfled shoe; the blouse is obscuring the velvet mantle.

To the life of the people then, the life of the toiling millions, art is beginning to look for a new inspiration, a new courage, a new joy. Painters have caught its homely tragedy. Poets are realizing its terrible pathos, its tender beauty, its epical force. And with this new art ideal, a new economic ideal is beginning to demand a new world wherein I shall ask nothing for myself or my child that all others cannot have on equal terms. Man is progressing, but each step of his progress seems only to reveal new rights to demand, and new freedoms to conquer. We have achieved religious freedom and political freedom, and now we are in the early beginnings of a struggle for industrial freedom — the greatest struggle that has yet come upon civilization. It will not be the conquest of princes, but the conquest of poverties. But the realization of this new liberty will demand the sinews of heroes, the wisdom of sages, the passion of poets. The Crusades, the Christianization of Europe, the emancipation of chattel slaves in two worlds — all the moral adventures of the past are dwarfed in the presence of this new ideal that now begins to press upon the conscience of nations. Into this world-struggle the poet of America will be drawn for a new prophetic utterance.

The Book of Kings is closed and the Book of the People is opening. The old epic was "Arms and the man," but the new epic is Tools and the Man!

ORATORY AS A MEANS OF CULTURE AND AS A PROFESSION

By CHARLES WESLEY EMERSON
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IF I were asked my reason for giving the study of oratory an important place in the education of our young people, I would reply: because true oratorical culture is a preparation for the life-work of an individual, whatever may be the province of that work.

Oratory, as an art, is dignified, elevated, and inspiring. It is potent in its appeal to all sorts and conditions of men. It is the most personal of all the arts, in the sense that it is the one most inseparable from the personality of the artist. Hence, its development involves the personal culture of the individual.

What is demanded of the orator? He must have a message for the world; he must be able to direct all the powers of his being toward imparting that message. Here, then, we have the two-fold basis of true oratorical training: it must have reference to that quantity of being which we call character,—for one cannot express—"press out"—what is not within; and it must seek to lead out that which is within, through the avenue of the physical agents, in adequate expression.

"But," says one, "if character-building is inseparable from oratorical training, then I need not enter a special school to study oratory, for the end of all education is character." True; and if the educational scheme in your school is realizing its highest end, your oratorical powers are growing. Why, then, have I deemed it worth while to devote my life to teaching the art of oratory? Not primarily for the sake of the art itself, noble though it is; but because there is no other discipline to which the individual may be subjected that is so potent in developing the possibilities of the being as is the persistent endeavor to marshal all the powers, latent and actual, in adequate, spontaneous, expression. Character itself is dependent upon expression. Expression is necessary to evolution.

What do I mean by true oratorical training? I mean a continued process of holding beautiful and truthful objects of thought before the mind of an individual, while leading him to respond, in expression, to

the truth and the beauty. Is that all? No. Oratory is the art of influencing minds, by means of presence, gesture, and speech. Then this spontaneous expression must have an objective point. It must recognize other minds, in order to fulfill its highest end. The criterion by which an orator must be measured is this: to what extent does he influence his audience? It is never: Does his audience approve of him? What, then, is the ideal of the orator? To see truth in its relation to humanity; to be possessed by a burning desire and an unswerving purpose to serve humanity through the relation of truth; and to be the transparent medium through which truth may shine upon humanity. The latter ideal demands that the entire person be surrendered in perfect obedience to the dominant purpose of the soul.

By holding before us this ideal, which must eventually supersede all lesser motives in the teaching of oratory, we can arrive at an appreciation of the educational value of systematic training in oratory. In the first place, such discipline affords the only complete physical culture possible. The mission of the body is to serve the soul. We too often, in our thought, limit this office of the physical organism to a ministration to the lower, material wants of the person. We ask, is my body skilful and enduring in enabling me to provide for its wants? But this, although important, is not the highest ministration of the body. There is a higher ideal of physical perfection. Does my body serve me as a free channel through which I may move out upon the world? Is it a transparency through which the soul may shine unhindered? Do I stand for the infinite possibilities of my soul, constantly influencing my fellow-men, through my presence, toward the highest truth that has been revealed to me? Or, is my body a wall of clay that shuts me from my fellow-creatures? Must I pass through life halting and stammering, unable to suggest in my person anything of the inmost beauty of my soul?

The highest physical education is that which renders the body the free expressive agent of the soul. That course of discipline by which the physical agents are brought into the freedom and harmony of action necessary to unity of expression, must secure the symmetry upon which health and beauty are dependent. And such a course of discipline is nothing less than the persistent endeavor to influence other minds toward the beautiful, the true, and the good, by means of every agent at the command of the speaker. The person may seem sadly restricted at first; but little by little, under the potency of a mighty purpose, one agent after another will respond, until the entire person seems spirit. Then it is that the body is redeemed; it has become the free servant of the soul.

Any complete system of training will supplement this process, any daily physical exercise which obeys the laws of the human organism and

the criteria of art. As the agents become free, and a consciousness of graceful, centered movement is established, the body will respond with ever-increasing effectiveness to mandates of the master. Thus is realized the ideal suggested by Browning: —

"Nor soul helps flesh more now than flesh helps soul."

Again, true oratorical training involves the most effective discipline for the mental faculties. Discriminating thought must be the basis of every effort A student of oratory, who is constantly led to direct the thinking of his audience, learns to think keenly himself. He soon learns that no amount of previous preparation can take the place of present vital thinking at the time that he is speaking. The imagination is strenuously exercised, for he can make nothing live in the minds of his hearers until he himself experiences or realizes it in imagination. In the genial atmosphere of this new realm of the imagination, all the creative power within him begins to stir. The discipline of the emotional nature follows that of the intellect, as a matter of course. The province of education is to present right objects of thought. "We needs must love the highest when we see it."

The will, too, is undergoing strict and relentless discipline. Every time a speaker, regardless of mood, commands dramatically, holds a situation, or personates character, he attains the requisite concentration by sheer force of will. He is learning to lift himself above himself.

As to the quickening of the spiritual life, that is inevitably attendant upon the oratorical training that takes cognizance of spirit as the only power in oratory; that rests absolutely upon the faith that spirit will govern form; that, therefore, never attempts to dictate form to spirit, but rather leads the spirit out in spontaneous expression, knowing that the forms of expression cannot but be truthful and vital if they are unconscious. Indeed, a student subjected to such a course of discipline acquires a habit of considering spiritual conceptions as the only realities. Love for all conscious being becomes the spring of his every motive. He learns that he develops his own powers in the ratio that he has served others; hence, service becomes his ideal

Develop, therefore, your powers of oratory, whatever may be your aims and ambitions in life. I urge this because the development of your oratorical powers means putting you in possession of your faculties, adapting you to meet the conditions of whatever sphere may claim you, and realizing the potentialities of your nature.

But you say, "Yes, I should like to be an eloquent speaker, or an effective dramatic reader, but I am convinced that I have no talent in that direction, and it would, therefore, be of no use for me to try."

Let us see. Expression means a pressing out of what is within. It is a law of nature. You cannot help expressing, in some measure, what you are. The question is, are you content to express yourself feebly, ineffectually, or do you choose to stand before the world for the truth which you represent? What you are in the depths of your being, you can become free to reveal to the world. Whatever of beauty and of truth you can appreciate in a great work of literature, you can learn to reflect to other minds. The law is inevitable. What you see, you can eventually, through constant endeavor, make others see. To deny that you have any "talent" for expression, is to assert that you have nothing to express. What I ask in the incipient orator is weight of being, a desire to serve, and a genius for work. These granted, I say nothing about "talent."

So far, I have been advocating the study of oratory because oratorical training involves, to a greater extent than any other discipline of which I know, an all-round personal culture that is the earnest of success in any field of labor. But doubtless you are wondering if I do not consider the field of a professional lecturer or a public reader a legitimate and dignified one. Beyond question, yes. It is a legitimate calling, to interpret to men and women beauty and truth, wherever one may find it. Even the entertainer has his place, for it is a service to mankind to divert them, at times, from the carking care of the world, which is "too much with us." But entertainment must not be the sole or the highest end of the professional lecturer or the interpreter of literature, else his profession loses its dignity and he descends to the level of a clown.

Is there a demand for high-grade platform work? I believe that there is, and that the law of success which governs the universe admits no exception here. Whoever has that which will meet the highest needs of the people, in whatever field, will find a demand for what he has to offer. The fact that the land is overrun with public readers, elocutionists, performers of various natures and grades, does not preclude the possibility of one gaining a hearing if he has a message to proclaim. The world needs, most of all, ideals; and the ideals that have ever been and ever must be potent in shaping the careers of men and of nations have been and must be presented through a living personality. If you would be an apostle of beauty to mankind, you must count no sacrifice of time and labor too great in attaining that personal culture which will render you an unobstructive medium of truth; then you must speak fearlessly the truth that is given to you, in all faith that it will find an immediate response in the heart of your fellow-man.

A FEW THOUGHTS FOR THE PUBLIC SPEAKER OR READER

ORATORY is advocacy.

Stand for what you advocate.

Spontaneous expression is truest.

A cynic cannot be an orator.

The great orator has more than ordinary faith in human nature.

Let no orator ever complain of what people think. He must compel their thoughts.

Pretense has no power to move men.

Oratory is conversation elevated. One may speak colloquially and still flame with eloquence.

An artist uses few lines, but they are bold ones.

The primary endeavor of the speaker or reader must be to interest his audience in his theme.

One must speak out of the needs of the audience, else he is no orator.

The orator must have everything within him that makes a warrior strong and a saint holy.

Avoid introspection while speaking. That you are purposing to do a thing is the best evidence that you are doing it.

One must become like a little child, in oratory, as elsewhere, if he would enter the kingdom of heaven.

The minds of an audience are the canvas upon which the orator paints pictures.

Clean-cut thought will reveal itself in clean-cut articulation.

An orator is an advocate, not a critic.

If called upon to condemn, one must do it by elevating the ideal.

The world wants not imitators, but men and women of creative power.

There is a difference between positiveness and aggressiveness.

Oratory is a power to make an audience act upon the truth.

An orator speaks with his audience, not to them.

Performance may command admiration and wonder; unity of expression, impelled by consecrated purpose, commands the soul.

The things that do not attract attention are often the things that have the deepest influence.

Progressiveness is not marked by mere force of voice. As we progress, we approach the heart of things.

An orator must present the thing itself, rather than facts about the thing.

«I am come that you may have life» must be the undeclared text of every discourse.

Animation, which must become habitual in an orator, is not dependent upon loudness of tone.

Only continuity of thought will produce smoothness of tone.

Ease in force must be an ideal for every effort.

An orator makes his hearers look for a thing before he says it.

An audience is bored by an interminable stream of sound without pause.

An orator influences his hearers even while silent. As strong an effect is produced by the pauses as by the words.

Pause for the sake of pause is ineffectual. Thoughtful pause, which is unconscious, results from seeing around the subject, seeing it in its larger relationships.

A tone or a gesture that attracts attention to itself, however beautiful it may be, defeats its own end.

Necessity is the criterion of task. Nothing is in good taste that does not serve.

It is useless to preach abstract goodness to an audience. Speak to their experience.

The orator cannot speak what he has not lived.

We build art upon what we have lived in imagination. The imagination gives experience to a man of genius. Genius is imagination.

An orator must assume that his audience is interested in his subject to begin with; but he must not rest upon that possibility in his conscious endeavor.

Go before your audience as if you had something of value to present. They will accept the estimate you set upon your thought. If your manner is apologetic, they will not expect anything of great value.

A profound orator brings to the surface pearls from the depth of thought. An artificial mind tries to appear profound.

A speaker never succeeds by unfairness. The universe is governed by truth.

An orator must never go away from home. He must carry his home spirit with him.

Oratory is essentially a social study. Private lessons may impart much information, but they cannot develop an orator.

Feeling is dangerous unless guided by thought.

Tell your story simply, so that it will be readily understood by the hearer.

The law of purity demands that neither a speaker's personal opinions nor his feelings shall obtrude themselves between the thought and the audience.

When one reaches the plane of art, his mind acts picturesquely.

All great orations have strong picturesque elements.

If you would set others on fire, you must be the living torch.

The eminent orators have always been associated with great movements.

An orator must stand on universal truth, and speak for universal right. There is little weight in personal opinions.

He who bears the welfare of others in conscious purposes is well poised.

Every great orator occupies the pedestal upon which his degree of service placed him.

Weight in oratory is the result of speaking from a high plane. Anything dropped from the heights carries weight.

The highest technique is the technique of the imagination.

The keyboard upon which an orator plays is the minds of his audience; the music which he discourses is mental states.

The one escape from self-consciousness is to have a definite purpose outside of self. "Take no thought" — Keep the purpose in view, not the result.

One can suggest to others anything upon which he can completely concentrate his mind.

A speaker must unite himself with his audience. He must advocate "our" cause.

Never speak down to an audience. Speak to the potential good in men and they will respond.

A good presence is the greatest aid to oratory.

Some people seem to be a transparency between men and the Spirit of Truth.

The ideal voice is soul incarnated in tone.

If you would be heard by more people, you must embrace more people in your consciousness while speaking.

Large bodies move slowly. Give your audience time to comprehend your thought.

An orator is incomparably greater than anything he can say.

Purity of expression rests primarily on vigor of thought.

Previous preparation produces greater present activity, but may not be substituted for present activity.

"Oratory is action" — but it is action in intelligible form.

Unless the emotion seems to make the thought that caused it stronger and more brilliant, it is offensive.

He that is commanded by truth is self-commanded.

Foresight leads the mind of the hearer onward from the certainty of truth already presented, to the anticipation of still greater things to be revealed hereafter.

Art is a servant, not a master; a means, not an end.

All thought and feeling must be subordinated to the spirit of revelation.

Oratory may be compared to a light which reveals everything but itself.

Meet your audience on common ground; touch the common chords.

Proceed from the known to the unknown.

One never rises to the highest plane of eloquence until he forgets himself in his devotion to the interests of others.

An orator, like a poet, is a prophet of God.

Great orations approach the poetical form more nearly than any other prose compositions.

Beatification, an inner joy, must be a well-spring of life within the orator.

The noblest thing in oratory is its teaching element.

Human life must be represented, in some manner, in every effort of the orator or reader.

The ideal in art grows out of the despair of the realist.

When one reaches the point where he despairs of bounding the universe with his voice and action, then his work begins to be suggestive.

The highest art in oratory is limitless in its suggestion.

What have I determined to become? That which I will express, I become only by expressing.

Oratory has been too long regarded as a kind of embellishment, a polish, or a veneer.

What you try to do for others you actually do for yourself.

Human nature was made to respond to eloquence as well as to music.

As David could not fight in the armor of another, so an orator cannot affect human life with borrowed instruments. He cannot assume a voice to fit a state of mind; he must induce a state of mind that will mold its own voice.

Ministers too often make the mistake of presenting grand truths as if they were so old and so familiar to everyone that they have become trite.

Is the truth old that you would present? Then it remains for you to bring it as a fresh revelation, to show something new in the old.

If you surrender yourself, with every agent at your command, to the expression of what you see to-day, to-morrow you can see more.

Authority, the highest test of oratory, is attained only when the entire being is subordinated to truth.

A great bank of darkness envelops the world. Every true teacher is a torch-bearer advancing into that darkness. We cannot add to the general illumination of the world by extinguishing the torches of others.

THE ARTIST AND HIS PROSPECTS

By JEAN PALEOLOGUE

THE artist achieves success by following his ideals, not by crushing them underfoot. He seeks truth and beauty, not gold. He goes to nature for his inspiration. He seems to live the life that many dream of living when they can afford to retire from ordinary business. It is not surprising that many young men and women seek the artist's sphere.

Success in professional or business life, it has often been said, is for the few. "The successful artist," says Will H. Low, himself a successful artist, "looks down the vista of years and finds it filled with me-

morials of comrades fallen by the wayside." It is the need of making a living, in the main, that makes the law of the survival of the fittest weigh so heavily against the artist. Art may be his mistress, but unless he inherit the golden spoon, necessity must still be his master.

His products, whatever their charm, must, in this material age, still be numbered among the superfluities of life. A comparatively affluent man can go through life very comfortably without purchasing a picture, though incidentally he contributes to the support of some artist by buying illustrated books and magazines. At the threshold of his career, the bread and butter problem bears hardest against the young artist. The young law student, the engineer, the business youth, find employment with those who have already achieved some measure of success along the lines which they have elected to follow. But the successful artist has no employment to offer the young artist, however talented the latter may be. Unless he is exceptionally gifted, or unusually fortunate, he has a long struggle before him for the recognition which must precede the receipt of money. He is frequently forced, in order to earn a living, to work at what may be termed the commercial branches of his art — drawing fashion plates, illustrating catalogues and advertisements, making pictures for lithographers, designs for wall papers, and so on. He has much to be thankful for if he can begin illustrating at once for the magazines and weeklies. But this work demands exceptional artistic skill, and the novice encounters competition with many already enjoying the advantage of possession. The young artist's need of making a living often causes him to do work which is far from his best. This practice, if persisted in, inevitably means deterioration. Frequently, the once aspiring artist finds that commercial art offers him a fair living and he sticks to it. This may or may not be a wise course, according to the individual's talents and circumstances. But the artist who has the necessary talent, and the something else that will not permit him to rest content with anything short of the best product of his talent, will do no more purely commercial work than is necessary to provide him with a bare living.

Two brothers, known to the writer, afford an illustration in point. The elder received his art training under a famous master in Paris. The younger obtained his, while earning a living, by attending the night classes of the Art Students' League. For "pot boiling" purposes both began to make pictures for lithographers in New York. There was a "boom" in that class of work then, and it paid well. The elder said: "I will make all the money I can out of it." The younger said: "I will make as little as I can live upon out of it and work at my art." The elder could not now paint a good picture if he tried, while the younger is a well-known artist and promises to become famous.

Artists whose names are now familiar to the picture buying public could tell many stories of poverty and hunger endured for art's sake.

It is not to discourage the young man who aspires to be an artist that stress is laid on the difficulties and obstacles he must struggle to overcome before he can realize his ambition. It is to reveal the conditions, so that he may enter the battle prepared for the conflict and thereby escape discouragement. If few emerge as victors, the victory is gloriously worth the winning. Fortunes, as fortunes are estimated in these days, are the reward of only a small number of artists who may be classed as successful, but there are high compensations in other directions. The artist feels the delight that comes from the exercise of creative power. In a measure, at least, he realizes his ideal. He understands the poetry of nature, he enters the magic realm of the beautiful. He is much freer from sordid cares than is the business man.

Excellent art schools now exist in the leading American cities. New York has the Art Students' League, the Academy of Design, and others. In Chicago is the Art Institute; in Philadelphia, the Pennsylvania Academy of Fine Arts; in Boston, the Boston Museum of Fine Arts; in Pittsburg, the Carnegie Institute. The Art Students' League of New York is recognized abroad as America's leading institution for the study of the pictorial and plastic arts. Started in 1875, its annual membership roll has not for some years fallen short of one thousand students. The tuition fees are about $50 a year. The corps of instructors includes recognized masters in their branches of art. Both day and night classes are maintained. It is a somewhat striking commentary on the value of self-help that from the night classes come a majority of the artists who achieve success. Men do not undertake hard work both day and night unless they have earnest purposes and are prepared to labor strenuously to attain their ends. In the day classes are found many students who take up art as a hobby, but who have never been subjected to the stern discipline of earning a livelihood.

The modern newspaper has solved for a large number of aspiring artists the problem of making a living. Illustrated daily journalism is a growth of recent years, but so rapidly has it developed that on an "up-to-date" newspaper a staff of artists is considered almost as indispensable as a corps of reporters. Not alone is this true of the most widely circulated metropolitan newspapers, but it applies to the leading newspapers in all the principal cities in the United States. The public demands that the important happenings of the day be told pictorially as well as in type. Three leading New York papers employ permanent staffs of from fifteen to twenty artists. On each of these papers there are three or four artists whose salaries range above one hundred dollars a week. Taking these into account, the average weekly stipend of art-

ists on these journals may safely be set down as at least forty dollars, which is more than is made by many devotees of the palette and brush who enjoy no small measure of fame.

The average earnings of the newspaper artists in other cities fall considerably below those of their New York brethren, but, in Philadelphia, Boston, Chicago, St. Louis, and San Francisco, there are many newspaper illustrators whose salaries afford them at least comfortable livings.

The student of art must not delude himself with the idea that the standard of achievement demanded of well-paid artists on metropolitan newspapers is easy of attainment. When pictures first began to appear in the dailies they were crudely drawn and badly reproduced. The workmanship now required of him is of a vastly higher artistic quality than then sufficed. Among the men doing illustrative work for New York newspapers are many who have received careful art training; not a few have exhibited pictures that have received high praise. Their work is often done under the most trying conditions. Always they are hurried. They frequently draw their sketches in the midst of shifting crowds. They make portraits of men who are continually changing pose and expression. They share in the rush and excitement of the reporter's life. When a "big story" is to be "covered" the reporter and the artist go to work together. However it may tax his energy, talents, and resourcefulness, each must get what he is sent to get, or explain the reason why. And, if the explanation is not deemed satisfactory by a most exacting judge, there is likely to be a vacancy on the staff.

The work demanded of the newspaper artist requires and develops rapidity of execution, firmness of touch, quickness in seizing the essential features of a scene, and great powers of pictorial memorizing. Many an artist, capable, perhaps, of achieving fame, will fail under the conditions of newspaper art work. Firm must be the aim, exhaustless the energy, and high the ideals of the newspaper artist who makes of the newspaper a stepping stone to high achievements.

Fortunate, financially at least, is the artist who can make drawings that will cause laughter. The caricaturists and cartoonists receive the highest salaries paid to newspaper artists. In the comic weeklies, artists also find a profitable market for mirth-provoking sketches. But, for the artist ambitious to succeed in serious art, the field of caricature is a dangerous one in which to dally long. The distorted view which it necessitates is destructive of the ideal, of the true and the beautiful. Delving among the follies, foibles, and weaknesses of human nature, and giving exaggerated expression to them, deadens the faculty for drawing the heroic and sublime. Considered as an end, however, the

portrayal of the amusing is an entirely laudable object for the exercise of artistic talent. The man who makes people laugh makes the world cheerier and better, and the cartoonist whose pictorial satires expose frauds and tricksters is a generous contributor to the public welfare.

Making illustrations for books, magazines, and weekly publications, is usually more congenial and stimulating to the aspiring artist than is drawing for the daily papers. Magazine illustrating is a field which in itself fulfills many a clever artist's ambition. It gives him the time necessary for good work, and the reproductive processes do his drawings justice. It pays well, if the work is up to the present high standard of quality. The prices range from $50 to $200 for a page drawing, according to the publication and the reputation of the artist.

THE SCULPTOR

Mathematically considered, the odds against achieving success as a sculptor are far greater than those which confront the graphic artist. Well it behooves the young man who has a fancy for modeling in clay to take stock of himself before undertaking to become a sculptor. Talent counts for only half the battle. Pluck and persistence are the qualities which win the other half. For the sculptor, however, fame reserves her choicest laurels. His creations in bronze or marble are practically imperishable. They stand in public places and perpetuate his name for ages.

After he has obtained his training, the sculptor is at a great disadvantage, compared with his brother artist, in the matter of earning a living. Rich men do not buy statuary as freely as they do pictures. A few bronzes or marbles will satisfy the most generous patron of art. Bread-winning occupations along the line of the sculptor's art are rare. Molding and carving for interior decorations help him a little. Yet he must have money to work to advantage; he must have a studio; he needs models. Andrew Carnegie once said that poverty was the greatest blessing that could be bequeathed to the ambitious youth. This is hardly true if the youth's ambition takes the direction of sculpture. Daniel C. French and Paul Weyland Bartlett count themselves fortunate that they were free from poverty from the start. F. Wellington Ruckstuhl did have to contend with poverty. Because his story is inspiring, both to the poor young man who wants to be a sculptor, and to the young man who has means and ambition, it is worth briefly telling here. Ruckstuhl was about thirty and was a clerk in a St. Louis store when he resolved to be a sculptor. After a little work in clay, he entered a competition for a model of a statue of General Francis P. Blair. His model carried off the

first prize, $150, but when the committee found that he was a clerk in a store, they refused to give him the commission to make the statue, which strengthened his determination to devote himself to sculpture. With $250 in his pocket he went to Europe, and for five months studied the art treasures on the Continent He returned to St. Louis penniless, but with confidence in himself unabated. He inspired others with it. Seven men gave him orders for busts at $200 each, to be executed after he had completed his studies in Paris, and paid him in advance. Ruckstuhl lived on that $1,400 for three years. Within two months after his arrival in Paris he began work on his statue of a female figure entitled "Evening" which is now at the Metropolitan Museum of Art in New York. He finished it in nine months. It received an "honorable mention" at the Paris salon, and at the World's Fair in Chicago, a gold medal. In 1892 he returned to America, opened a studio in New York, and for a year did little but battle with poverty. Then orders began to come to him, and the struggle was over.

"To become a successful sculptor," Mr. Ruckstuhl has said to the writer, "one must have more than the talent or skill necessary to reproduce the human form in clay. The sculptor must have creative power. The man who can do nothing but copy can be hired very cheaply in Paris. A mastery of technique is only part of the sculptor's equipment. To express character, force, dramatic fervor, idealism, charm — the things which transform the inanimate clay into a work of art — demands more than the model, or any combination of models, will supply. To achieve the highest in his art, the sculptor must mold himself as well as his clay. A thorough mastery of himself is just as essential as a mastery of the technique of sculpture. If he does not master himself, his dreams will remain only dreams Back of his work is the man. The finished statue, to the ordinary observer, reveals nothing of the long years of arduous study, the industry, energy, enthusiasm, self-denial, the struggles against adversity and discouragement, which have enabled the sculptor to create it."

It is generally conceded that the sculptor will find his best training in Europe. Within recent years, however, the facilities in American art schools for studying sculpture have been greatly improved. But, when the student gets beyond the fundamentals, the advantages of Paris are manifold. There he finds the art atmosphere in which he obtains education by the subtle process of absorption. He is in a city beautiful. The highest examples of his art are all around him. He has opportunities to compare his work with that of many others who are talented.

AMERICAN ART WILL BE SUPREME

By WILLIAM M. CHASE

With this century begins a new era for American art — an era of recognition and appreciation. The Paris Exposition opened the eyes of the Old World to the achievements of the painters of the New World.

Our artists gained a very important triumph in Paris. Heretofore, it has been the general impression abroad that American art is, on the whole, mediocre, and unworthy of serious consideration. The American exhibit at the Exposition changed this feeling of indifference and patronizing toleration to admiration. The connoisseurs were very much surprised. It was admitted on all sides that the product of our own artists was much superior to that of the exhibitors of any other foreign country. The French judges gave tangible expression to this estimate when they awarded us more medals than were received by the artists of any other country outside of France. American art, in competition with the best in the world, has borne off the palm. It has never before gained such a victory, which is important not alone from a patriotic standpoint.

One effect of the French recognition will be very practical. The patrons of art in this country are mostly very wealthy men who know little of pictures. They accept the general opinion of a painting, and, if that opinion is very high, are willing to pay a very high price. Paris is the art center of the world, and it is the French verdict that prevails. A French name, or an Italian, or a German, or even an English name, gave a picture a higher commercial value than an American one. The latter, with a few exceptions, was considered a stamp of inferiority.

But now that the best French judges have given American art products higher rank than those of any other foreign country, the American patron, in buying the work of our own men, will know that he is buying the best. American artists will sell their paintings more readily than heretofore, and will receive higher prices for them. The general average of quality will rise to even greater heights than it has yet attained; for, after all, no man feels more keenly the stimulus of appreciation than the artist.

The United States will eventually lead the world in art; and New York will become the world's art center in the production of new work. In nothing but in their galleries of the great paintings of the past, will the Old-World cities be superior. One of the most accomplished of Europeans in art matters, Piloti, director of the Royal Institute of Munich, and my own former master, one day said to me: —

"Art was born in the old cities of Italy. Its wings grew strong, and, in search of a more vital atmosphere, it soared northward, and alighted in Paris, in Munich, in Vienna. Its next flight will be across the sea to your own country, America."

"Why!" I asked him.

"Because," he said, "your people have the nervous sensitiveness and the fresh vitality which make the artistic temperament. You are a commingling of Old-World blood, but revivified. When we are worn out, when we have arrived at racial old age, the American race, having perfected the development of its own individuality, will be in the full vigor of life, will have, with all that we have done as lessons and examples, the basis of the noblest art structure the world has yet known."

I think, speaking generally, that the best work in the American exhibits, that which received the most praise, was executed, not by American artists who think they must live abroad to get the true art atmosphere, but by the men who do all their work here at home. The former cannot help but strongly feel and reflect the European influence, which makes their work appear more or less imitative. This is not by any means true of all of it, yet the vigorous, distinctive note which has come to mark American art is, on the whole, found in its best development in the home product. All of the latter showed upon its face that it was American. Just why it showed this is difficult to say. The pictures covered a wide range of subjects and manners of treatment; yet the subtle, rather mysterious American quality, so hard to define in individual pictures, was always there. It is with American pictures as with American men; I may see a man in the streets of Paris who, in dress and manner, is apparently not different from a Frenchman, yet I know him for an American as far as I can see him. We are acquiring a marked racial individuality which is already finding expression in art and life.

It is no more necessary for the American artist to study abroad than it is to paint abroad. Indeed, I do not regard it as particularly desirable for the art student to go to Paris or Munich to learn the rudiments of his art. For a number of reasons one is better off nearer home, and he can now learn just as much art in this country as anywhere else in the world. Our schools are fully as thorough and complete as the famous ones in Paris. The only direct advantage to the American artist of a

trip abroad is the opportunity it gives to study the masterpieces in the old galleries. Every artist should be familiar with these, but the study of them may well be delayed till he or she has mastered technique and is able to reproduce the American atmosphere and environment.

MUSIC AS A CAREER

By DANIEL BATCHELLOR

SINCE art deals with beauty, and the artist is the one whose sense of the beautiful is most cultivated, it follows that the artistic career is an enviable one, apart from any pecuniary recompense which it may bring. In a ruder age than ours few artists rose above poverty and actual want. Yet the artists of that time found compensation in a world of ideal beauty which often made them forget the privations of their physical life. But in our own time, when art is more in demand, and enters so much into our commercial transactions, all art products have a market value, and even moderate artistic ability will insure a comfortable living. There are various forms of art, some of which are recognized as being higher than others. The immediate purpose of art is to charm the senses. In this respect the cook, the perfumer, and the upholsterer may be artists; but these do not enter into the realm of high art. The sight and hearing are the leading senses, and when through these the mind is lifted above the actual to an ideal plane, that is true art.

When we speak of the fine arts, it is assumed that we refer to sculpture and painting, probably because these are the older forms of art. But if art is essentially a representation of the beautiful and an appeal to the imagination, it is certain that music must stand side by side with sculpture and painting.

Indeed, it becomes a question whether it is not the highest form of art. Sculpture, painting, music,—that is the order in which the arts have developed. Sculpture reached its culmination among the ancient Greeks; the great painters came in the middle ages, and musical art belongs to the modern world. Sculpture has to do with tangible forms of matter; painting still uses matter, but in a more attenuated form; while music is produced from the invisible and intangible air. Again, the sculptor has his model before him, and his art is to reproduce the lineaments of nature. The painter also has to "hold the mirror up to nature," although there is more of ideal suggestion in his art than in that

of the sculptor. But nature furnishes no model for the musician. The world is throbbing everywhere with the material of music; there are fugitive hints of song in the ripple of the brook and in the warble of the bird as well as in the tones of the human voice; but nowhere in nature can he find a song to copy. That must come from his own consciousness; hence of all artists the musician is in the truest sense the creator. It follows from this that the highest flights of imagination must be sought in the realm of music. It is also true that music thrills the soul more than does any other form of art.

When we consider music as a career it must be taken for granted that only those who have more than the average musical faculty should think of making this their life-work. To be successful in music calls for native talent and a strong inclination toward some form of musical expression. With these indispensable conditions the next question is what branch of music shall be taken up, for to achieve marked success in this age of specialization, it is necessary for the aspirant to focus all of his powers upon some one department of the art.

First comes the musical composer. He is the originator of those musical ideas which can be reproduced indefinitely. He is closely akin to the poet, and in both of them the faculty must be inborn. But he is not born a composer; the native gift must be developed by constant application. Very few can become great masters of musical composition, since it requires talents of a very unusual order. And yet the musical composer is not essentially different from other men; it is a question of degree rather than of kind. The gift of native song is more general than is usually supposed. Most people of a sensitive and poetic temperament have something of the divine afflatus, and

> "Still hear in their souls the music
> Of wonderful melodies."

But for want of a proper musical training these melodic promptings are in an unknown language, and pass away before they can find expression.

Perhaps you may think that if you cannot be a fine composer it is useless to attempt any musical composition. You may not have the power to become a great painter, and yet it is worth while to try to paint a picture. When you have done your best the result may seem very poor, but henceforth you will have a keener appreciation of the great works of art,— in sympathy, if not in execution, you will be one with the great painters. And so with music. When the soul is touched with a musical strain, dwell upon it, keep repeating it until it becomes an intelligible form of utterance, and not simply an ear-tickling process. Then try to work out some simple theme of your own. The first attempts may be complete failures, but you will soon find yourself more

closely observing other compositions, until you get some idea of musical form. You may get some help in this direction by studying the exercises in color music in Vol. VI. of THE SUCCESS LIBRARY. It may be that you will develop unexpected power in musical composition. More likely even your best efforts will lack that elusive spirit which bears the same relation to musical form that the living soul does to the body. But it is worth all the effort to have a larger appreciation of the works of genius, and to follow with fuller understanding the workings of the master minds in music. This is the necessary training for a musical conductor, and it is a great help toward the intelligent rendering of any piece of music. No matter how skilfully the singer may control his voice, or the player his fingers, if he does not understand the form and spirit of the musical composition, his rendering of it will be mechanical instead of artistic. With all his vocal or instrumental gymnastics he will miss the soul and meaning of the music. This brings us naturally to another musical career.

THE MUSICAL PERFORMER — His work is subordinate to that of the composer,— or perhaps we should say coördinate with it, for although he does not create the musical composition, it is his mission to re-create it time after time, since the song passes into silence as soon as it is uttered. In this work of reproduction there is scope for the highest artistic ability, and the effect of the performance depends largely upon the personality of the performer. Two persons may play or sing the same piece of music in perfect time and tune, and yet an audience will be deeply moved by one rendering while the other will excite but little interest. Temperament and personal character largely determine the failure or success of the performer. The talented musician may choose either a vocal or an instrumental career. The choice should be determined by the nature of his talent.

THE SINGER — There is probably no other profession in which talent is more immediately recognized than in that of the singer,— and few which offer better pecuniary inducements. But the Muse is very exacting, and demands the undivided allegiance of her votary. To begin with, the singer must have a good voice and perfect health. Then he must be strictly temperate in everything, and must be prepared to forego social pleasures and indulgences that may be quite natural and proper for others. The singer must work continuously to gain strength and refinement in vocal expression. On the other hand, he must guard against narrow exclusiveness. The great singer must have broad sympathies, and to this end he must interest himself in many things outside of his technical studies; but all other things must be tributary to the main current of his life. Everything must be brought to this test — will it make him a better singer?

Supposing the singer to have the necessary qualifications of health and voice and a strong inclination toward singing, how shall he start on his career? He must be content to begin low, and, however simple the work may be, to do it thoroughly. Before long his gift will be recognized in the social circle, and the most natural thing will be to join a singing society. There will be invitations to sing in the church choir, and he will soon be offered a salaried position. The salary will probably be small at first; but he is before the public, and according to his merit he will receive offers of higher positions.

Now everything depends upon himself. If he is satisfied with what he has achieved he will probably always remain a church singer. It is pleasant to be appreciated; but if he allows himself to be swayed by the indiscriminating praise of partial friends he will be lured away from the difficult path of upward progress to stray in the plains of easy mediocrity. But if he has an unswerving ambition to rise he will regard his present attainment only as the starting point for higher work. He will invest all the money he can spare in taking lessons from the best teachers he can find. This will be expensive work; but every dollar spent in this way will be returned, later, a hundredfold. With improved vocal powers and finer musical culture he will now be in demand as a concert singer. In the ranks of mediocrity he had hosts of competitors; but as he goes higher there are fewer rivals. There is always room at the top. Yet if there are fewer to compete with him the demands upon his own powers grow more exacting. Every step gained must be firmly held, or there will be retrogression.

From the concert platform to the leading rôles in oratorio or opera are but steps in the ladder of progress, difficult, it is true, but possible, nay inevitable, to him who with his whole soul works upward to the goal.

If it be thought that this is an unattainable ideal we can only say that it has been realized over and over again. True, we cannot point to any American man who has reached the topmost round as a singer, because the American genius has not thus far worked in that direction. But when we come to American women we may well be proud of the story of grand achievement. Many noble instances might be cited, but passing over the triumphs of the past, the woman who to-day stands among the world's great singers was once a country girl at Farmington, Maine, and later at Boston. Nobody dreamed then that Lillian Norton, as she was then called, would become one of the most famous singers of her time. In the old Puritan home there was little to encourage her in this direction; but she had an ambition to be a singer, and she devoted all her time, thought, and energy, to that one object. Step by step she rose to greater heights, until now Nordica receives the homage of the whole

musical world, and her name will always be inscribed on the scroll of fame. There is a possible Nordica in other American girls to-day. They have the faculty in the germ, as she had; but they cannot achieve her success unless they, too, show her indomitable will and tireless energy.

THE INSTRUMENTALIST — There are many musically-gifted people who are not endowed with a fine voice, and for them instrumental music offers a career. Those who have a natural inclination for playing, generally show it in early childhood by their fondness for being near the piano or other musical instrument. Unless a child shows this natural fondness for piano playing it is waste of time and nervous energy to have to go through the drudgery of daily practice.

The hand is not naturally adapted to piano playing, as it is to grasping objects, and therefore the fingers need to be habituated to the keyboard from childhood, so that lifelong habit may become second nature. But beware of the other extreme of keeping the child seated too long at the piano when he ought to be engaged in free play. In the past there has been much harmful and unnecessary task-work imposed upon children at the piano. Here and there a child has passed the ordeal successfully and become a great player; but in the large majority of cases it has injured the child physically and hindered rather than helped his musical development. There is now much improvement in this respect, and the early practice is made more interesting to the child.

Every child should know something of music as a language before taking lessons upon the piano. This can be best secured by singing exercises in the nursery, kindergarten, and school. When there is a musical idea in the mind it will be comparatively easy to make the musical instrument express that idea, and in this way years of mere mechanical drill may be saved.

If, after years of elementary work, the boy or girl shows a growing attachment to the instrument, and unmistakable skill in performance, it is time to think of instrumental music as a life career. Everything must now be subordinated to that end. The more education and general culture he can get, the better; but it must all be with a view to becoming a better musician.

Have a good instrument from the beginning, and engage the best teacher obtainable. Read carefully the two articles upon piano technique by James Huneker and Mrs. Cheney, which set forth in a masterly way the two different sides of this subject. And yet, important as technique undoubtedly is, it must not be prized for its own sake, but as the means to secure more perfect musical expression. Carefully study each piece of music, first to understand its form and the inter-relation of its parts, and beyond that, to get at the inner spirit of the music. In

proportion as you do this, you will become an artist, and rise above the throng of musical artisans.

All this means large outlay of time, energy, and money. In most cases the question of pecuniary return becomes an important consideration. Advanced students generally pay their way by giving lessons to younger pupils. Then there are many positions as church organists and accompanists which are always open to persons of talent and character. After the first successes have been gained the matter of living expenses will become less difficult. But if you are true to your ideal, your motto will still be *Excelsior*. Your pecuniary gains will be carefully husbanded to help you to higher studies. Set no limit to your possible attainment. Teacher, organist, concert-player, and virtuoso — you will not have to seek these positions; when you are ready for them, they will seek you. Everything depends upon yourself.

If you choose other instruments, such as the violin or the 'cello, still the path to perfection and fame is the same.

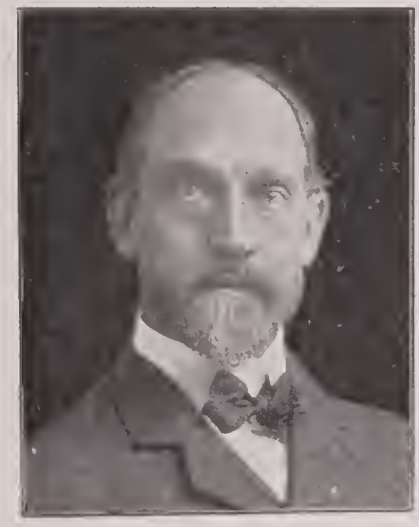
Little has been said about music teaching as a career. That is an immense field, and to treat it properly would require a series of articles. But enough has been said to show that music is not only delightful as an art, but that it also offers a promising career to those who have the qualifications of a fair musical ability and indomitable energy.

It is not an untrodden path. Others have gone this way before you, and some have reached great honor and fame. We are apt to look upon these great artists as something apart from ourselves, and so they are; but remember that once they were like their companions, many of whom may have had gifts equal to their own, but lacked the spirit of endeavor. These greater souls aimed high and persevered, until music became the ruling passion of their lives. Their genius consisted in the "infinite capacity for taking pains." It was not all done at once, nor by some lucky circumstance: —

> "The heights by great men reached and kept
> Were not attained by sudden flight;
> But they, while their companions slept,
> Were toiling upward in the night."

THE EDUCATION OF THE ARCHITECT

By JOHN GALEN HOWARD.
Architect of the University of California



NO OTHER art or profession requires in its followers such a combination of qualities as does architecture. The soul of the poet, the eye of the painter, the practicability of the shopkeeper and the mechanical knowledge of the master craftsman are the attributes of the ideal architect. Probably no man ever possessed all of these qualities in sufficient degree to deserve the appellation,—"an ideal architect." Yet there have been great men who have proved that the real in architecture can be brought close to the ideal. These are the men who have discerned that beauty and utility, architecture's prime elements, are closely related, and can be brought together in harmonious and impressive unities.

The welding of the beautiful and the useful is the chief business of the architect. His work has its basis in the physical, but the significance of its full-blown forms is found in the realms of the esthetic and the spiritual.

Many men who endeavor to practise architecture can not, or do not, express in their work this dual nature of the art. Some of them are able builders. They erect most convenient houses — excellent shelters from the rains and snows, the cold and heat; but I think Nature desires that those who raise permanent structures in her domains shall give them a beauty in keeping with her own. Those who overlook this, violate universal harmony. Others in the profession err in the opposite direction. Forgetting that all material things have a foundation in Mother Earth, they make designs of buildings that are veritable castles in the air,— charming, but impossible, unless reduced to practicability by others. The first of these classes are builders; the second, artists. Neither, in my opinion, are true architects.

Yet the joining of the two elements of architecture is not so very difficult. It requires only a little insight to see that their relationship is intimate. It might be said indeed, that beauty is to utility as woman is to man. The Divine Architect made them separate entities but a perfect whole.

In true architecture, therefore, beauty is evolved from a harmony between a building's form and its uses; and herein lies the proper archi-

tectural standard. The eternal fitness of things and ages of architectural development have fixed this standard, and, while allowing the architect ample scope for originality, have decreed certain general plans and schemes of decoration for certain classes of structure. Thus, the art gallery that looks like a hotel, the library that suggests a mausoleum or a church, the office building that is conspicuously ornate, are all examples of bad architecture. To the uneducated eye they may seem impressive, but to the good architect they are incongruous and unbeautiful. They have no true character, no soul; their external appearance, which should be a countenance, is but a mask.

To find the architecture which is most truly characteristic and expressive we must go back to the Greek. Here we are at the fountainhead of the architecture of modern times. Yet the Greek, the source of our inspiration, was itself the product of a long development. It had been shorn of all superfluity when its flower was expressed in the temples and other edifices of Athens. It was architectural beauty reduced to its simplest terms; and this simplicity was a chief element in its perfection.

The architectural aspirant should devote much study to the Greek; from it he will acquire most valuable knowledge in the vital matter of achieving in his work the beauty which comes from simplicity and complete harmony between form and purpose. In their order he should study Saracenic and Moorish architecture, that of the Italian Renaissance, the Gothic, and other styles which are distinctive. All of these show variations reflecting the times and condition of their development, but underlying their peculiarities is the great architectural principle, the noble trunk of a stately tree.

Most fascinating and inspiring is the study of this growth. A glorious heritage has been bequeathed to us by the masters of the past. The young architect who does not keenly feel that it is a glorious heritage, who does not glow with enthusiasm and the desire to do great work when contemplating the splendid architectural achievements of bygone ages, has mis-chosen his vocation. He will never achieve distinction in architecture, which bestows its laurels only upon those whom it has "called." In other words, architecture is so much of an art that a man must have a natural gift for it, just as he must have innate talent to become a good painter or sculptor.

Since our architecture is based on that of the past, the study, by personal inspection, of the edifices of the Old World is an indispensable factor in the training of an architect. These researches will teach deep and valuable lessons. Furthermore, the sojourn in Europe is very helpful to the student in the attainment of culture of mind and manner, which is as necessary to the young architect hoping to be employed by persons ordering beautiful houses as such culture is to the minister, physician, or

college professor. The European experience fires the ambition of the young aspiring architect; he becomes imbued with the true spirit of the art. If he ever did regard it as a mere business, he loses this point of view and sees architecture as a vocation of noble traditions and high ideals. This standpoint elevates the tone of his character and of his work, and is a most potent influence in making him a true architect. The architect who does not go to Europe for at least a short stay, appears to me like a man who neglects to take possession of a great fortune that has been bequeathed to him.

The architect's education can hardly be too broad. A good foundation for it is laid by the youth who starts by devoting a year or so to drawing from the antique and from living models in an art school; then comes the distinctly professional training. In the United States, several of the universities have fine courses in architecture. In Great Britain the apprentice system is the chief means by which the art is taught. Our American schools are excellent, but possess the disadvantage of opening too wide the door of architecture. Many young men who instead of architects might just as well be mechanical engineers, or lawyers, or trust magnates, attend these schools, pass the final examinations, and, without special fitness for the work, become certified architects. Some of them are unusually clever, in a business sense; they are able to persuade people to give them commissions at terms advantageous to themselves; they make money and rank as successful architects, whereas, they are successful business men, responsible for many of the atrocities which blight fair landscapes in the name of architecture.

The English system is better calculated than ours to eliminate the unfit. There are not the compensations of college life about the pursuit of architecture in a crowded London office, and most of those who decide to become architects because the calling is a highly respectable one, drop out under the pressure of hard work and low pay. They find that they can obtain more money for less work in other lines, and rightfully conclude that architecture is a poor "business." On this account, and because of the living influence of English architectural masters of the past, the average of work in Great Britain is probably higher than that in this country, although we have a number of men who are unsurpassed. In Paris, also, the general level of architecture is higher than here. The *atelier* system, by which architecture is taught in the studios of prominent men, gives the student a high conception of architecture as an art.

Yet, despite the general superiority of European work, I am confident that the United States, within a few years, will be the birthplace and center of a new era of architectural progress. I base this prediction on the teaching of history. The conditions now prevailing in this coun-

try are as they were in Greece, in Italy, in Spain, when architecture burst into splendid flower. The influences most conducive to the highest architectural activity seem to be a republican form of government, which leaves the worker free to follow the bent of his own genius rather than the caprices of monarchs and their followers, and a state of national growth and prosperity. This was the soil and the sunshine that nourished the best architecture of the Old World.

A great American architecture would come sooner if our system of architectural education were more exactly adjusted to the needs of the novices. Such adjustment is made difficult by the many and varied elements of architectural training. Young men with a real talent for the profession can hardly be brought under the yoke of a fixed system. As with painters, poets, and others whose work is the product of intellect and imagination, the real development must come from within. No architect ever owed great achievements to his education, yet the importance of an architectural training that will raise the general standard cannot be gainsaid or overlooked.

In England, the apprentice is confronted with much routine work and masses of very prosaic facts. These are interesting to one who has advanced far enough to grasp the whole architectural idea, and is thus able to give to the facts their proper places and relative importance. But looming up in the very beginning of the path, they often appear forbidding to the youth of artistic temperament. Completely shutting from his view the pleasant scenes beyond, they cause him to turn to other fields of art. In France, on the other hand, probably not sufficient attention is given to practicability; while in the United States the training the schools give is almost wholly theoretical. When the young American is graduated and enters an architect's office, he finds himself in the midst of routine work where his fine theories and ideas seem hardly to have a place. A long time is required for the adjustment of the proper balance.

Americans will be the first to find, I think, a really adequate system of architectural training. Indeed, I can see in my mind's eye the founding, within a comparatively short time, of a school where architectural theory will be taught hand in hand with practice, where the student will be instructed in the principles of house building and be expected to actually build a house. This is, of course, not a new educational plan; Mr. Squeers used it at Dotheboys Hall, as you may remember. But it fits more exactly than any other method the needs of architecture.

The man whose artistic instincts are not based upon a foundation of ordinary shrewdness and common sense cannot expect to make of his own life-work in architecture a symmetrical and imposing structure. He must depend upon others for many things. He cannot estimate the cost of a building with any accuracy, unless he knows the cost of labor and

building material. He cannot be sure that the contractors are doing his work properly unless he has a good working knowledge of the building trades. He cannot get the best work out of his employees and keep the contractors up to the mark unless he has executive ability. He, ordinarily, cannot obtain prices which will give him an adequate profit unless he is a good business man. He cannot protect his art against the materialism of the builders, maintain harmony with the latter and the rest of his subordinates, and please the owner, unless he is blessed with a large and ready store of tact.

Some of these qualities appear antagonistic to the pursuit of art, yet almost all of our greatest artists, whether writers, painters, or orators, have been plentifully endowed with practical ability. Shakespeare was a competent stage manager, and knew how to accumulate a substantial fortune for his old age; Michelangelo could do many things well; Victor Hugo was a very provident man. So it is in architecture; the greatest artists have shown the greatest knowledge of the mechanical principles and details of construction. We often see the able architect instructing the carpenter, or master mason, or interior decorator, in matters pertaining strictly to his trade,—a trade to which he, an intelligent man, has devoted the best years of his life. Why should the architect, who has given comparatively little time to this particular trade, be able to instruct the craftsman? The secret of the matter lies in the architect's superior education; his horizon is broader and his standpoint higher. He sees the trade in perspective—in its relation to other trades. He is thus enabled not only to grasp it in its entirety, but to acquire knowledge of its details by "short cuts."

This composite ability naturally comes to the architectural worker by slow degrees. Gradually, what he learns from his studies of books and buildings and from experience is assimilated. This process takes much time. In ten years, perhaps, the fires of enthusiasm, if they are still aglow, have burnt away the gross, have welded the good metal into one mass, and left the residuum of knowledge and ability which makes the true architect.

But the first essential is the fire—the native impulse. You lack this if you do not feel the fine imaginative appeal of architecture. But if buildings do interest you in this way, I will say with William Morris: "Saturate yourself with that intimate knowledge of buildings beautifully and architecturally constructed; study real architectural construction, not the gymnastics that would overleap the building arts. Pry into material; learn to appreciate the *I know* of the workman; work manfully at a craft,—if you begin with one you will end with many,—not with a view to gaining what is called 'practical experience,' but to gain the power of artistic expression in material."

THE STAGE AS A CAREER

VIEWS OF CONSTANT COQUELIN, RICHARD MANSFIELD, JULIA MARLOWE AND MINNIE MADDERN FISKE

JULIA MARLOWE

FEW callings are as fascinating to youth as that of the actor. The travel, the freedom, the applause, the music, the sparkling lights, all combine to throw a glamour of romance over the actor's life. It seems far removed from the prosaic, work-a-day existence of ordinary mortals, and therefore many imaginative and aspiring young persons, the majority of whom are of the gentler sex, look upon the stage career with longing. A certain proportion are able to realize their wishes and enter theatrical life. Here disillusionment awaits them. They find that they are not in a land of romance, but in an occupation in which there are many disappointments, and where the hardest kind of work and struggle are the prices of success. It is much better for the young stage aspirant to know something of the actual conditions in the theatrical profession before becoming one of its members. On this account, the testimony and advice of a number of leading actors and actresses is given to our readers: —

CONSTANT COQUELIN — "What is art? Every man gives a different definition. Mine is that art is truth clothed in beauty. What is truth? This, too, is a question with numerous answers. But truth, in the restricted sense in which it applies to acting, is the portrayal of the human character in exact accord with human nature. What is beauty? Here again is a wide term, meaning many things to many men. It seems to me that harmony is the word that best expresses what beauty is.

"An actor is an artist who must express truth clothed in beauty through the medium of himself. The painter has his colors and his canvas; the poet has his written language; the actor has only himself, the outward man, the voice, facial expression, gestures and attitude, with which to convince the intellect and stir the heart. Behind the instrument there must always be another and wholly separate force. Therefore, the actor, as I have taken occasion to say before, has, when on the stage, a dual personality — his own and that of the character he is portraying.

"When on a visit to America in the late 'eighties, I gave expression to this idea, which to me seemed rudimentary, I was much surprised to find it was greeted with a storm of protest. A great many persons among

them leaders in my profession, affirmed that the actor should merge his own personality to the greatest possible extent in that of his part. This contention seems to me to be absurd. The actor playing Hamlet may feel very keenly the wrongs of the unhappy Dane, but in furthering his plan for vengeance, he cannot forget that at certain intervals he must cease speaking, to give Ophelia, or the Queen, or the Ghost a chance; that at fixed junctures he must retire from the stage and hurry to his dressing-room to change his costume, or must wait quietly in the wings instead of sweeping on to his revenge. This conformity with a great number of prearranged restrictions most assuredly requires in the actor a very alert consciousness outside of his part. The author has arranged his climaxes with the highest dramatic effect, and he expects the actor to be likewise careful. Great dramatic force is sometimes expressed in an unstudied outburst of emotion, but such results are accidents, upon which no dependence can be placed.

"No, the young actor can hope to become eminent only through painstaking effort. After a very careful study of his part there may come the inspiration which will lend to his acting the glow of the sacred fire and cause him to be proclaimed a genius, but without careful preparation his inspiration cannot be effectively expressed. Before the fire can be lighted, we must have the fuel. The young actor who would succeed in his art should make a practice of reading many times the play in which he is to appear, in order that he may become thoroughly imbued with the author's idea and thoroughly know his part in its relationship to the others. Then he should form a very intimate association with the imaginary man whose personality he is to present to the world. He must study the man inwardly and outwardly so that he may completely understand him, sympathize with him, feel his prejudices, think like him. It is only in this way that the actor can express the soul of the character and reach the heights in dramatic art.

"This study of the character is the beginning of the actor's preparation, but is by no means the end. He may understand his man, but the audience must also be made to understand him. The latter's words and actions, as laid down in the book of the play, will not alone bring about this result. The character will never seem human or be interesting without the proper appearance, voice, gestures, and the thousand and one small attributes which the author cannot specify, but which are necessary in the building of a character which has the breath of life. The transformation of this figure of the author's pages into a human being lies with the actor. He must pay very careful attention to giving this character as fitting an appearance as possible, remembering always, however, that 'dress' does not make the man on the stage any more than elsewhere. Numerous actors give appearance undue importance, unfortunately imagining that looking a part is acting it.

"In preparing the body of a character as distinguished from the spirit, there must be a certain amount of conventionalization, that is, the character must conform to some extent to type. In your own experience you may have encountered an unusual personality, most interesting to portray, but

unless your audience recognizes it, your acting will be ineffective. Besides the preparation of the part for the audience's eye, there is the important matter of the voice, an instrument difficult and uncertain to control. I have practised for days to give just the right intonation to a certain speech and have almost given up in despair when — presto! it is there. The actor must never cease to study articulation. The gestures and the small actions designated in this country by the expression the 'business of the part' must receive the most minute attention if complete success is to be obtained. Celebrated actors of my acquaintance have given performances marvelous in their truth to nature, so spontaneous and unstudied was their acting. Yet in preparing for the part in which they are apparently free from all restraint and self-consciousness, I have known of these men devoting hours to the practice of a single gesture before the mirror, or to the speaking of a single line.

"Thus, the actor of talent, or of genius even, must have recourse to those homely but efficient aids, work, practice, and training, if he would gain a high and permanent place in dramatic art. In Paris the actor of ability may have the admirable training offered by the *Conservatoire*. In America you have your dramatic schools, most excellent institutions, if I may speak from the little I have seen and what I hear. I should think the aspiring young American actor or actress would make the best possible start in their profession by attending one of these schools. Perhaps in your good stock companies the necessary preliminary training can be obtained, but the schools undoubtedly give the student greater opportunities, and are wider in their scope and more finished in their instruction. I understand, too, that a course in a school gives a much easier *entrée* into the best companies than does any other beginning.

"Theatrical managers have many engrossing duties and no time to act as dramatic instructors. When they allot a part, they expect the actor to know how to make the most of it. In Paris, managers usually get their best actors from the *Conservatoire*, which is conducted under the auspices of the Government and gives to promising students very careful dramatic training. Those who receive the prizes upon graduation are admitted into the *Comedie Francaise* company, which at once gives them a sure footing in the profession. But to gain entrance as a student to the *Conservatoire* the young man or woman must have very decided talent.

"Without a natural gift for acting, all training goes for little or nothing. Not a few actors lack this bounty of nature. They have mis-chosen their sphere in life. The young aspirant for histrionic honors should be very certain as to his possession of the dramatic instinct before he enters upon a stage career. Many women believe that beauty is a chief requisite of success on the stage. As a matter of fact, physical beauty alone is of minor importance, and will bring an actress no permanent success. The public may be enthusiastic over her beauty for a season or two, and then she is dethroned; another woman with a fresher face is crowned queen of beauty. Of far more value for a stage career than beauty of face, is the beauty of spirit designated by the word 'charm.' A charming woman on the stage

never fails to win and hold her audience. The ideal equipment of the actress is obviously dramatic instinct, charm, and physical beauty. Many actresses are endowed with all of these qualities. The famous ones among them are those who possess, in addition, great intelligence, vitality, and capacity for hard work.

"A man can depend even less than a woman upon physical attributes for success in the theater. While an attractive countenance and graceful figure are essentials in the stage lover, the public will soon tire of an actor, however handsome, who has no real dramatic ability. Physical characteristics, however, cannot be overlooked; they are important factors in fixing a player's limitations. For example, a man who has a tendency to be short and fleshy, with legs with an outward bend, or a *retroussé* nose, is tremendously handicapped in serious rôles, while as a comedian he may win great applause. To speak of myself, I never could get an audience to accept me as a lover in the first act. Toward the end of the play, after very hard work on my part to enlist their sympathies for the character I am enacting, they will perhaps see that it is possible for a woman to love a man of my unromantic profile, but at the beginning they are inclined to laugh. Some actors have characters so pronounced and personalities so strong that it is impossible for them to cloak their identities in a rôle. Their force and fire may make great and impressive actors of them, but it is always Mr. So-and-So, the celebrated actor, rather than the character in the play, that we are seeing. They are, in a sense, actors of one part, and for this reason do not rise as high in dramatic art as do those who can arouse and thrill their audiences in many and widely different characters.

"The most representative actors can achieve this. Providing a man has no marked and restrictive physical peculiarities, he can succeed, if he is a good actor, in both comedy and tragedy. The inclination on the part of many persons to cry down the player who has won applause in comedy when he essays tragedy is an injustice to the man and an injury to his art. The actor may not be as effective in tragic parts as in comedy, but the critic should judge his performance on its merits and not from a comparative point of view. The homely adage that 'practice makes perfect' is nowhere more true than on the stage. With as much experience in tragedy as he has had in comedy, the actor will probably be equal to, and perhaps excel, his former triumphs. But, from discouragement and chagrin due to light treatment of his aspirations, he is likely to cease his efforts to broaden his sphere of achievement, and dramatic art may lose notable contributions.

"The young man or woman ambitious to enter the player's ranks should remember that in our profession one's status of manhood or womanhood depends peculiarly upon oneself. You may live up to the best within yourself or not; your work and surroundings will neither prop you up nor undermine you. Before you is a free field and no favor for the working out of your own salvation. The weakness of the theatrical profession is the weakness of human nature; its strength is the strength

of noble inspirations and high ideals. If you regard the drama as the most impressive of all mediums for the teaching of great lessons in life and morals, and endeavor to conform your own life to this idea of your vocation, you will win very great respect from your fellow-players, and will achieve a most honorable position in the world."

RICHARD MANSFIELD—"Before I had embarked on a stage career, I used to dream delightful dreams of the actor's life. In imagination I felt the intoxication of success; I was thrilled at the thought of the applause and the adulation of the crowd. I contemplated with delight the life in an artistic atmosphere, with merry gatherings, gay suppers, after work was over. I have experienced but little of these things. I have not had time to enjoy them, even if they were actualities, instead of figments of the eager imagination. I am too busy pursuing that fleet-footed goddess 'Success' to stop to gather flowers by the way. Success is like a phantom; you are close at her heels, and seem to be about to grasp her, and then you see her speeding along in front again. This is, of course, because one is rarely satisfied with present success. There is always something yet to be attained. It is my desire to advance my standard every year,—to plant it higher up on the hill, and to never yield a foot of ground. This requires constant effort. I find my reward not in financial returns, for these are hardly commensurate with the outlay of labor; nor in the applause of others, for this is not always discriminative or judicious; but in the practice of my art. This suggests what, it seems to me, is the true secret of success in dramatic or any other art.

"Love your work; then you will do it well. It is its own reward, though it brings others. If a young man would rather be an actor than anything else, and he knows what he is about, let him, by all means, be an actor. He will probably become a good one.

"A good actor is almost sure to succeed because he is conspicuous in the theatrical profession; there are not many of his kind. The word average as applied to an actor, means poor. For example, it is not easy to find actors with manners which are above criticism. It is quite time that persons with the manners of sea cooks should cease to disport themselves on the stage—especially in society dramas. At least, you should know how to use your knife and fork, how to sit down, how to bow and how not to bow. Do not imitate the gentleman who enters the drawing-room and places his hat upon the mantel-place, parts the tails of his coat and straddles a chair. Do not pull down your shirt cuffs, nor contemplate your finger-nails. One day, at a rehearsal in Boston, I saw a gentleman trimming his finger-nails with a penknife while talking to a lady.

"Many actors are affected in manner and try to be eccentric, under the delusion that these faults of deportment are evidences of genius. If you have genius, give swing to it only in your work. Don't try to further yourself by a pose—by long hair, an odd manner of speech, or strange attire. There is no real necessity for an actor, a painter, or a poet to wear his hair long. He can probably do his work just as well with short hair. When

a man has recourse to eccentricities of dress or manner, it is an outward and visible sign of inward weakness. You cannot succeed on the stage without work. You cannot spend the days in bed and the nights carousing. More women than men succeed in the theatrical profession, because they are more in earnest, harder workers, more courageous, and more temperate than the average man in the profession."

JULIA MARLOWE—"Speaking generally, I think the stage is a better profession for women than for men, for the reason that it has to do largely with the emotions, and is, therefore, more in keeping with the feminine character than with the masculine. As to whether the stage is good for a woman or not, depends entirely upon the woman. Provided she has talent, is willing to work hard and patiently, and has ideals to sustain her, the stage offers a very satisfactory life-work.

"If a young woman has decided that she has the necessary qualifications to become a successful actress, and is determined to try, she must, ordinarily, come to New York City to make her beginning. It is here, chiefly during the summer season, that companies are made up. Unless the aspirant has friends to make the way easy for her, she must interview the managers of companies and of dramatic agencies, and must succeed in convincing some one in authority that she has the talent or the personality required to play a certain part. If she can afford to take the expensive course in one of the dramatic schools, her chances for a good start are much improved, because the managers of the best companies are now taking most of their recruits from these schools.

"When the young woman gets her first part, she must be prepared for the many trials and disappointments, which, as a rule, come before permanent success."

MINNIE MADDERN FISKE—"Too many actresses feel that they have no time for study. They have an idea that they must play constantly while they are very young, never realizing that a few years' study will make their services more valuable, and that they will gain rather than lose by the investment of some of their time in study. On the stage, as everywhere else, the great difficulty is that young people want to act before they have completed their education, and sometimes before they have received any training at all. I believe that a thorough training is as necessary to success in the dramatic profession as in any other walk of life, and the man or woman who attempts to rise merely through the possession of talent is almost sure to fail sooner or later. One cannot have too much experience."

JUDITH BEROLDE—"A young woman's entrance upon a dramatic career is usually based upon dreams, but any success she may attain is always based upon work.

"Ah, yes! dreams are what lead young girls to the stage, and how rudely these dreams are shattered! The very first season 'on the road'

destroys them all. The awakening is a shock to the young aspirant. She begins to feel that high ambition has no place in theatrical life. She may laugh at her old aspirations, or she may cry. It is a hard time for her; the veil has been drawn aside so abruptly that for a moment she sees nothing but the bare boards which loom up in front of her and convince her that this is not the life she pictured. She hasn't had time to understand it all yet. She sees the mean side first, and that is a side she hardly expected to see at all.

"It may be that she will accept this side and not try to look above and beyond it. If so she is unfortunate, and her presence on the stage will be a detriment to herself and her profession. Or it may be that she does raise her eyes, and by degrees she begins to realize that her first view of the actualities of the stage was not a true one. Her aspirations, which she has never really lost, come back to her. She begins to dream again, but these are practical dreams, based upon the great truth that achievement does not come of mere dreaming, but of earnest and patient effort. She has at length found herself, as Kipling says about the ship, and is ready for her real endeavor to win success.

"I know well what the beginning is; I have been through it all, and now that I look back at it, I realize that the hard knocks were necessary. They are the foundation, and training, and education — the developers. Many persons have an idea that success on the stage may be acquired easily or not at all. This, of course, is a great mistake. Rarely does real success come in my profession without long and earnest preparation, unless, indeed, one is a genius — and there are few geniuses. Talent, of course, is necessary; personal magnetism is very desirable but with them there must be the determination and the will to work. One must not become easily discouraged.

"Soon after the beginning of my own stage life, I was in Fanny Davenport's company, and I remember telling her, one day, that I had begun to doubt if I was fitted to be an actress, because I could never shake myself free from stage fright.

"'You don't want to,' she answered, quickly. 'It is the result of your nerves, your sensitiveness, and these are what make the artistic temperament.'"

POVERTY NO OBSTACLE TO A PUBLIC CAREER

By JOHN FISKE

YOUNG men have been advised not to take an active interest in politics or the affairs of state until, by business or professional activity, they have secured competence or fortune sufficient to make them independent of party vicissitudes. In my time, I have read the statements of many college professors who have given this advice. It is the essence of the most narrow-minded of dogmas.

Such advice is deleterious to democratic institutions. It is dangerous to the young men of America. To confine political functions to the rich, or to the independent classes, would, ultimately, develop the most intolerable forms of despotism. Had it been in vogue a century ago, there never would have been a country like the United States; France would have retrograded to a powerless nation; the world would have been denied many of its most luminous and inspiring examples.

Money does, and always will, play an important part in politics, and there is no reason why it should not. A country's wealth is represented by its politics. Money has much to do with the policy of a nation because, in this age, it is the power that dominates everything. It must be considered seriously, and it must be used rightly. It must be associated, in an honest way, with industry and labor. There is nothing else so alluring as the possession of great wealth. There is no reason why the possessors of it should be the only ones to enjoy political patronage.

The carping ones will say that Washington was the richest man of his time. This may be very true. It must also be remembered that Washington was a man of broad principles, that he loved his liberty more than he loved his wealth, and that he could see the possibilities of a country like the United States. The precepts he inculcated into the minds of the people were not the precepts of wealth, but the precepts of liberty. He was willing to risk his life, to give up his handsome home and his easy existence to fight with the common people. He bared his breast to death. How many rich men would do that to-day?

Those who have made the history of the country have known the struggles of the poor. They have faced life with nothing but hope. But they have had more than hope,—they have had grit and ambition,

two qualities that will not down, that no hoof can grind into the sand. I believe that every American living has been shocked at the stories of the youth of Abraham Lincoln, his squalid environment, his privations, and his disappointments. Do not tell me that he was guided by an omnipotent hand. He was the master of his own destinies. He said that there was a way, that he would find it; and he did. But his great spirit bore to the grave the deep scars of those early struggles. What had "Phil" Sheridan to look forward to when he was a canal boy? As much as any man in the world. He put his mind in the right channel; he knew that the world needed men; he was going to be one of them. Garfield made the same resolve early in life. He told his mother that he would be President of the United States. She did not laugh at him, and tell him that the presidency was no place for a poor man. She said: "Persevere, study hard, be honest, and you will have just as good a chance as any other young man."

There is no reason in the world, nor any doctrine to oppose it, why every young man in this country should not aim to be the President of the United States. It would be a blessing to the nation if every youth had that aim, for it would make the young men nobler and better citizens, and it would be another step toward that ever-troublous economic question, how to do away with the prisons. I have no time to waste with an American-born citizen who says that he can never be President. Scarcely a man in the United States had a past more depressing or a future more hopelessly gloomy than Ulysses S. Grant. Yet he was ever buoyed up by the hope of preferment and renown. Andrew Johnson was as humble a tailor as ever drew a stitch. Blaine, the ambitious school-teacher, said: "A man cannot fail who believes in himself."

Jefferson, Adams, Livingstone, and Franklin, were born in poverty. Analyze their characters. Why did they succeed? Simply because they said they would. They earned money in legitimate callings, and they had the ability to save what they earned. They knew that time has an intrinsic value; therefore, they made every moment count. Benjamin Franklin was the best example of a time-valuing man the world has ever known. The great Pennsylvanian, Samuel Jackson Randall, was a man whose poverty was especially creditable to him. His life shows that there is no incompatibility between the narrowest simplicity of life, the most rigid economy in personal expenditures, and the highest success in public life. He spent thirty years in state and national legislation, and left a name and a host of achievements that will live long in the memory of men; but his estate was appraised at less than one thousand dollars. In his case, poverty was no obstacle to achievement, nor to fame. I venture to say that he died far richer than many a millionaire. He lived during that terrible epoch of extravagance that followed the Civil

War,—that period of greed and grabbing that ruined the hopes and characters of many men. But no contumely marred the name of Randall. He was twice speaker, the acknowledged leader of the house, the chairman of the most important committee, and had opportunities to be one of the public plunderers. But he lived modestly within his salary, —a notable gentleman, a worker for his country's good. It would be a miserable interrogatory to ask if his life paid, in a commercial sense. No. But he left something that will endure forever. John A. Logan served his state and his country with fidelity and honor, and died poor, a patriot.

While all of these men had poverty in abundance, they had one element that made them renowned. That element was character. Character is not a separate part of a man, it is the man himself. The term character, in its narrowest sense, means a disposition to do right. A man who discerns right, who prefers right, will have the strength to keep his character perfect. In our colleges, it may be regarded as a poor policy that no provisions have been made for the development of character. It is supposed that the environment will show a student the importance of a good character, and the misfortunes of a bad one. But the man, himself, must have the disposition, and the foundation of a good character will be easily laid.

The best men in the country are wanted to fill its political offices. Take the list of presidents of the United States. They were all men of sterling character, and it is to the credit of the people of this nation that they would rather have, for their chief executive, a poor man with a good character, than a rich man, no matter how powerful his influence, if the tainted breath had dimmed the mirror of his reputation. The compensations of political life were never measured by the wages of the employed. It must be admitted that popularity and public favor are often capricious, and that the idol of to-day is often an outcast of to-morrow. But, in the end, the people are just and generous, and they honor independent thought, courage, manhood, and truth, and are quick to forget errors that proceed from an intrepid spirit. I do not believe in the man who lets political defeat close his career. If you are advocating a cause, and you believe in the infallibility of that cause, stick to your views as you would to life. If you are right, you will some day be heard.

A man who enters politics will find some companions, and be obliged to make some familiarities, that will seem impossible to endure. Now and then, relations that in private life would not be countenanced, must be tolerated with the most smiling complacency. He must deal with men of all grades and conditions; for we are a free nation, and the ballot is our right. But there is no reason why this association with the masses should not be elevating and ennobling.

The present epoch of politics, I might say, is a new one. The leaders must be men of appearance and good taste. The day of the swaggerer has passed. It is the age of the business politician,— the man who is a gentleman, a business man, and a scholar, all in one. When Benjamin F. Butler addressed those in the slums of Boston, he did so in evening dress, with a *boutonnière* in his coat. He believed that his constituents wanted him to be just as stylish as the candidates of the aristocrats.

Great men are as rare in politics as anywhere else. Many enter the arena without the ability or the stamina to succeed, but their life is short, and the energetic and educated men soon take their places. The pay of every public officer is supposed to be adequate to the needs of the citizen who holds that office, and in almost every case it is. It is not, and it never will be, the American purpose to make an officeholder feel that he is an aristocrat. He is a servant of the people. Those who enter politics with filled purses, and use their private means to exalt their positions, are doing their country and themselves an injustice. Be it ever remembered, that, as rocks resist the billows, and as the sun defies the planets, the Constitution of the United States stands an impregnable bulwark of liberty, the strong tower and citadel of defense for the constantly menaced institutions of self-government. It was born with the nation, and it has advanced with the country's industrial progress and its artistic and educational progress. No man within its protection has a right to treat it slightingly, and none can use its doctrines to advance his own personal vanity. Its most energetic defenders have been men to whom the pride of a well-filled purse was as naught when compared to its value as the beacon of liberty and right. The man who wrote it could never have given to it its sublime and noble purpose, had he not been a child of the poor. He knew, from the bitter lessons of grim experience, the necessities of the people as a people, and he wrought those feelings in words that will live until the government stands adjourned forever.

We, who have tried to show the growing youth the path in which to tread, have ever been abused because we cling to our ideals. They tell us that Washington, and Jefferson, and Adams, and all the others, had chances that none possess to-day. That is too ridiculous to even ponder over. We use these examples because we are absolutely sure of them. We know that they won success by hard work and honest methods, and that the welfare of their country was more to them than the commonness of personal gain.

No young politician can afford to go into the arena without first studying the lives of those men, and then agreeing to be guided by their precepts. The pessimist, and the man who sees in politics only a field for the demagogue whom luck has placed on the pedestal, or to whom influence has given a start in the race, are the men who can never be

elected. If you are sure of yourself and also of your standing, solicit an independent place on the ticket, by the canvass of the citizens, and then the election boards must recognize you. At the last presidential election, fourteen men were in the race. When you have the chance, make known your views. If you have the courage of your convictions, the people will be proud of you. Be ever ready to refute the idea that an ambitious youth must put money in his pocket before he can enter public life. He must have brains in his head. If you run for a small office and are defeated, do not let that stand in the way of any future attempts. The next time, be ready to make your cause more evident. The mistakes of the man who defeated you will serve as a foundation for your fight. Let those in your neighborhood know that you intend to follow a public life. Talk politics to them whenever you get a chance. Notice the manner in which the country changes to meet the demands of the time. Make every moment pay. Get into good company by an honest, pleasant personality. Attend every meeting where you can hear the questions of the day discussed, and when there is a call for a public speaker, let your voice be heard. Be explicit, but not voluble. If you have something to say, say it briefly and pointedly. Throw your whole soul into your work; but never be a clown. Let the public become aware of your purpose, and, more than all else, let your life be to them an open book, from whose pages they may read a story that will tell of honor and good purpose. When you have won the confidence of a hundred men, it is easy to win the confidence of a hundred more. Confidence spreads, and men want men to represent them who can be trusted. Soon a thousand people will know you to trust you, and they will tell a thousand more. When you are called into the arena, let that confidence be your guide.

The main part of government is plain, practical business, and it requires the same traits, faculties, and methods, as a great commercial or manufacturing enterprise. But the field is broader and the opportunities are more alluring. Government affairs concern every citizen, and the legislator with novel and forcible ideas, which he expresses in original and striking language, has the foundation of success, for he has the audience of every voter.

The country needs great men. They will be found, but they will be men who have shaped their careers, who have worked up from the bottom, who have been guided by the precepts of their illustrious fathers. Financial considerations must not preclude the poorest from public life. Jefferson said: "Our country's destinies will ever be in the hands of those who have come up from the ranks. All that is needed is for those in the ranks to prepare themselves."

THE CITIZEN AND THE PUBLIC MAN*

By THEODORE ROOSEVELT

Good citizenship does not necessarily imply genius. Genius has been defined as the infinite capacity for taking pains, and good citizenship consists in the practice of the ordinary, humdrum, common virtues, which we all take for granted, and which, sad to say, all of us do not carry out in practice.

Jefferson said that the whole art of government lies in being honest. That is not the whole art, but it is the foundation of all government. The foundation is not enough, but if you do not have that, you cannot erect upon it any superstructure that is worth building. You must have honesty as the first requisite of good citizenship. We have too much of a tendency in this country to deify mere smartness, mere intellectual acumen unaccompanied by morality. There is no attitude that speaks worse for a commonwealth than this of admiring or failing to condemn the man who is unconscientious, unscrupulous, and immoral, but who succeeds. If a man has not the root of honesty in him; has not at the foundation of his character righteousness and decency, then the abler and the braver he is, the more dangerous he is. It is an additional shame to a man that he should be evil, when he has in him the power to do much good.

In all our history, who is the man first thought of when Americans wish to name the archetype of evil? Benedict Arnold, the traitor, who had not the root of honesty in him. And yet he was one of the most brilliant soldiers that ever wore the American uniform. Had he ended as he began, he would have been an example to all Americans. How would our nation look if we failed to condemn Arnold as his crime deserved; if we said: "Arnold a traitor? Oh, yes, but then he was a dreadfully smart man." There is a danger to us as a nation in the

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* In preparing this article Mr. Roosevelt made use of the substance of an address recently delivered by him at the church of Rev. F. C. Iglehart, in Newburg, New York. In a note accompanying the corrected and partially rewritten manuscript, Mr. Roosevelt says: "I am doing this simply from a desire to meet your wishes and to help a publication of most excellent aims." — The Editor.

career of the Benedict Arnolds of the political and financial worlds; of the men who prosper in business or in politics by wrong-doing, and who find weak-minded apologists to say for them: "Oh, well, maybe he has been a little tricky, but he has succeeded." Shame to any man who permits his admiration for success to lead him into condoning crime when that crime has led to success! Shame to any man or group of men who permit admiration for wealth or political position to make them condone the evil-doing through which that wealth or that position was attained. We are in danger from the man who tries to rise to political prominence as a demagogue, by inflaming class against class, or section against section. We are in danger from the man who tries to rise in political power by truckling either to the wealthy man who seeks to take corrupt advantage of his wealth, or to the man without wealth who is moved by malice, envy, and hatred, to conspire against the man who is thriftier or more progressive than he. It is necessary to condemn the two types alike. We are in danger from the men who rise in business through swindling, whether on a big or a small scale, and the reason we are in danger is because public opinion is not awake enough, enlightened enough, to make the crushing weight of its condemnation felt against the men who prosper in these ways.

After honesty, as the foundation of the citizenship that counts in business or in politics, must come courage. You must have courage, not only in battle but in civic life. We need physical and we need moral courage. Neither is enough by itself. You need moral courage. Many a man has been brave physically who has flinched morally. You must feel in you a fiery wrath against evil. When you see a wrong, instead of feeling shocked and hurt, and a desire to go home, and wish that right prevailed, you should go out and fight until that wrong is overcome. You must feel ashamed if you do not stand up for the right as you see it; ashamed if you lead a soft and easy life and fail to do your duty. You must have courage. If you do not, the honesty is of no avail.

But honesty and courage, while indispensable, are not enough for good citizenship. I do not care how brave and honest a man is, if he is a fool he is not worth knocking on the head. In addition to courage and honesty, you must have the saving quality of common sense. One hundred and ten years ago France started to form a Republic, and one of the noted men, an exceedingly brilliant man, a scholar of exceptional thought, the Abbé Sieyès, undertook to draw up a constitution. He drew up several constitutions, beautiful documents! but they would not work! The French National Convention resolved in favor of liberty, and in the name of liberty they beheaded every man who did not think as they did. They resolved in favor of fraternity, and beheaded those who objected to such a brotherhood. They resolved in favor of equality

and cut off the heads of those who rose above the level. They indulged in such hideous butcheries in the name of Liberty, Equality, and Fraternity, as to make tyranny seem mild in comparison. And all because they lacked common sense as well as morality.

Two or three years before that, we in America had a body of men gathered in a Constitutional Convention to make a constitution. They assembled under the lead of Washington, with Alexander Hamilton, Madison, and many other eminent men. They did not draw up a constitution a week, as the brilliant Sieyès did, but just one Constitution, and that one worked. That was the great point!

It worked, primarily, because it was drawn up by practical politicians — by practical politicians who believed in decency as well as in common sense. If they had been a set of excellent theorists, they would have drawn up a constitution which would have commended itself to other excellent theorists, but which would not have worked. If they had been base, corrupt men, mere opportunists, men who lacked elevating ideals, dishonest, cowardly, they would not have drawn up a document that would have worked at all. On the great scale, the only practical politics is honest politics. The makers of our Constitution were practical politicians who were also sincere reformers, and who were as brave and upright as they were sensible.

Take Washington. He was not a mere theorist. Not a bit of it. He had served in the Virginia Legislature again and again before the war broke out. There he acquired the experience that every man must have in a Legislature if he tries to accomplish anything. He found, when he was with a lot of men actuated by different motives, that he could not have his way altogether; that he had to get the best result he could out of the materials at hand. Alexander Hamilton had taken a prominent part in the politics of New York State. So of Madison, the Adamses, and Patrick Henry, in their commonwealths. These men were all men of theories; but they were not mere theorists.

They had worked in popular bodies, had seen what representative governments and legislatures could and could not do, what the people would and would not stand, just how far they could lead them, just how far they could drive them. They knew they could not get all they wanted, but they knew they could get a great deal. They were not fools and therefore they did not insist upon an impossible best. They were not knaves, and therefore they did insist upon the possible best. If they had been either fools or knaves, they would have done irreparable damage to the country— just as much if they had been one as the other. The fool and the knave play into one another's hands. They do not think they do, but they do. If the men of whom I speak had insisted upon the impossible, on what they could not get, we would not have any Constitu-

tion. If they had not insisted upon the best they could get, their work would not have been worth doing at all. In other words, they had to work as Washington and Lincoln always did work.

For instance, there were in that Constitutional Convention men who were almost as wide awake as we of to-day to the evils of negro slavery; but they lived in a generation when not one man in a thousand felt as they did, and they had to consent, not merely to the recognition of human slavery, but to give increased representation to the slave states for the negro slaves they contained within their borders. It was indefensible from the standpoint of logic; and later the Constitution was denounced as "a league with death and a covenant with hell," because of its containing such a provision. We of our day would be criminal if we put in such a provision. But our forefathers, working under the actual conditions, had to accept the provision, or they could not have obtained the Union, this free Republic. They would have begun exactly such a career as we have seen the republics of South America follow during the eighty years that have elapsed since they threw off the yoke of Spain.

But our leaders were not merely "practical" men, either. They were accustomed to the conduct of affairs, but they were also men of the study, of the library, men who could draw on their knowledge of what had been done in other nations, in other ages. They not only drew from their experience for actual government, but from the wealth of their knowledge of past history. They did not belong to the narrow-minded type which says: "Oh, I am practical," as an excuse for being illiterate or base. Distrust any man who advances the excuse of being practical when he is convicted of some infamy, or is shown to have been utterly ignorant of history.

To be practical, if you use the word in its proper and highest sense, necessarily implies that the man shall have a knowledge of history as well as practice, and above all, that he shall thoroughly understand that to be practical does not imply being base. In the long run, being practical implies being decent, and, if it does not imply that, then drop it.

It does no good, to resolve against vice in the abstract. All the good comes from acting in the concrete, in a way that carries out in practice the principles laid down in the abstract. There should be an eleventh commandment: "Thou shalt tell the truth, and thou shalt tell it just as much on the stump as in the pulpit." Do not fail to perform whatever you have promised. On the other hand, do not, through weakness, folly, or wickedness, promise or ask to have promised what you know cannot be performed. When a man runs for office, if you ask him to promise what you know cannot be done, you are asking him to lie. You are taking a position that is infamous for yourself, because you are asking him to take

an infamous position. On the other hand, if you ask him, as you have a right to ask him, to do what can be performed, and he fails to redeem his promise, hold him to the strictest accountability. If he promises you the millennium, distrust him. If he tells you that provided you vote for his particular, patent remedy, he will cure all diseases of the body politic, and will see that everybody is happy, rich, and prosperous, not only distrust him, but set yourselves down as fools if you follow him.

We have lived 1900 years in the Christian era, and as yet we have had to make our progress step by step with infinite pains and infinite labor. In spite of haltings and shortcomings, we have been striving onward and upward, and as we have made progress in the past, so we will make it in the future. You will not find any royal road in patent legislation, in curious schemes by which everybody becomes virtuous and happy. Not at all! We are going ahead, I trust, a little faster than in the past, but only a little faster. We hope to keep going forward, but by steps, not by bounds. We must keep our eyes on the stars, but we have got to remember that our feet are on the ground. When you meet a man who tries to make you think anything else, he is either a visionary or a demagogue, and in either event he is an unsafe leader.

The citizen who does his whole duty will be careful not to wrongfully attribute dishonest or bad motives to a public servant. This is as reprehensible as to fail to condemn the actually blameworthy. In either case you tend to confuse the public conscience, to debauch the public morality, to make the rogue strive and prosper, and to drive the honest man from public life. It is of vital consequence that our public servants should be honest; it is of no less vital consequence to the welfare of the nation that the real truth should be told about the dishonest and the honest alike; and woe to the man who offends in either respect.

Finally, remember to stand for both the ideal and the practical. Remember that you must have a lofty ideal, as Abraham Lincoln had, and that you must try to achieve it in practical ways as he tried to achieve it, during the four years that he lived and worked and suffered for the people, until his sad, patient, kindly soul was sent to seek its Maker. Remember, also, that you can do your duty as citizens in this country only as you are imbued through and through with the spirit of brotherhood; the spirit that we call Americanism. You can do no permanent good unless you feel, not only in theory but in practice, that fundamentally we are knit together by the close ties, the closest of ties, the ties of morality, of fellow-feeling, and sympathy in its broadest and deepest sense. We cannot live permanently as a republic; we cannot hold our own as the mightiest commonwealth of self-governing free men upon which the sun has ever shone, unless we have it ground into our souls that we know

no class, and no section; that east, west, north, and south, our people, whatever may be their occupations, whatever their conditions in life, stand shoulder to shoulder, striving for honesty, for decency, for all the fundamental virtues and morals that make up good American citizenship.

THE TRUE POLITICIAN

By BENJAMIN B. ODELL, Jr.
Governor of New York

I HAVE very little regard for the man who makes politics a business. But every man should make it his duty to take just as much interest in politics as he takes in his business. The field of politics is not small. It is far from being filled, but I do not regard any profession or business as being filled. If governments are to be improved or sustained, the study of the economies of politics should be denied to no young man any more than he should be denied his citizenship, and I believe that political economy should be sufficiently simplified to permit a course in its rudiments in the primary schools. Knowledge thus gained will give the youth a base for intelligent and independent political opinions. It is the influence of independent voters that affects most powerfully the decision of public questions.

The young man who wishes to engage actively in politics must cast to the winds the belief that it is an impeachment of respectability to be associated with a party, or with the management of a party. Strong, well-developed, well-managed combinations are just as apt to show their supremacy in politics as in business, and it is not discreditable nor demoralizing to blend one's interests with such an organization. If the citizen keeps steadfastly in his mind the patriotic principles that bind him to his party, and the honest convictions which must be possessed by the man who becomes a factor in the management of his nation, then no stigma can be placed on his name; no carping critic can defame him, because he has his country's best interests at heart.

If a young man feels that his abilities are such as to qualify him for public office, he should enter politics; but once in the arena, he should not be seeking, seeking, continually. My experience is that business men make the best politicians.

The educated man in politics is becoming more and more a potent factor and a necessity. If there are any young men training for politics, let me tell them they will never regret gaining all the knowledge within their grasp.

The success of men in politics is not so frequent as the success of men in business. Some have not the endurance to remain in politics, for a political career means many defeats. But the man who would be a true politician must laugh at setbacks; he must not consider them defeats at all, but must take up the burden where the citizens dropped it, and fight the battle anew. Only such men have won; only the men who have been defeated year after year, who have faced the bitterest phases of despair, contumely and contempt, but have raised their banner after each defeat and carried it finally to victory. There were times in my early political life when I felt that any further attempts to gain political recognition were as hopeless as recalling the lost past. But I had entered the fight to win, and had determined not to let any defeat stand in the path of that determination.

Some men were never intended for political life and therefore cannot hope for success. These men lack the personal characteristics of the true politician. They lack the patience that must be one of the politician's chief virtues. They lack the art of knowing how to represent a community of persons of all shades of political beliefs, or they enter upon a career of grasping greed and individual preferment which they find cut short,—and none too soon. I have no sympathy with the tendency of a certain class of citizens to decry, on the ground that it is degrading, an honest association with men of affairs in politics. Nor have I any sympathy with the office-holding politician who has no aim in life but to draw his salary. I have very little sympathy for the men who are in politics solely for their own gain. Such men are necessary only in the positions which they ultimately fill,—clerkships. I cannot regard such men as politicians, and not one ever becomes a leader.

POLITICS AS A CAREER

By HON. GALUSHA A. GROW
Ex-Speaker of the House of Representatives

One of my colleagues, during my early years in Congress, was Henry Winter Davis, of Maryland, whose career deserves careful study by every young man ambitious to enter public life, for it affords a signal instance of the value of thorough preparation for one's life-work. Davis had been a fruitful gleaner in all the fields of knowledge, and had not merely dipped into, but had thoroughly mastered, many branches of learning. Thus, to a knowledge of legal and constitutional principles that seemed intuitive, he added a knowledge of facts that was almost equally so; and these combined fully equipped him for the ready and intelligent discussion of any question to which he addressed himself; quick wit and a full mind making him equal to every demand. He died in the prime of manhood, too soon for the full ripening of his fame and influence, but he lived long enough to win for himself an unusual place in legislative work. No small part of his success was due to his laborious student days.

Davis, for a dozen years, was the most powerful orator south of Mason and Dixon's line, and often his auditors, too numerous to be contained in any hall, would stand for hours in the rain to listen to his arguments, held spellbound by his gift of speech. Here again the young man looking to a public career can borrow a useful lesson, for Davis had given as much labor and care to the development of his oratorical powers as he had to storing his mind with useful knowledge. To the art of public speaking must a youth give earnest attention if he would become influential and conspicuous in public life. There is a little doubt in my own mind that any young man of good education, fair ability, and honorable aims can become a man of influence, provided he will incessantly and wisely cultivate the art of oratory.

Thomas Corwin, the greatest stump speaker of his generation, often declared to me in his latter days that his power as an orator was due to years of patient toil in his youth, and throughout his life he bestowed on every one of the great orations which he delivered, much labor and great care. He carefully prepared the topics and the general outline of his speeches, relying upon his copious vocabulary for expression at the

time of utterance. His vocabulary he had enriched by early and patient study of the Bible and the great English poets. Shakespeare and Milton he read constantly, believing that a man saturated with the rhythmic and noble thoughts of these poets could easily maintain pre-ëminence when engaged in oratory. Byron, too, he read for his descriptive power, for the melody of his verse, and for his exquisite imagery. "These," Corwin used to declare, "are my ammunition, and it is my opinion that a man of average capacity, if he will become familiar with these authors and will practise public speaking, can be esteemed among the ablest."

Roscoe Conkling's success as an orator was also due to labors begun in his youth and continued through life. He made it a habit in his early days to devote several hours every morning to the reading of Macaulay, and to the study of the English poets, committing to memory many passages, and to that habit he attributed whatever gift he afterward revealed of impressive narration. An incident may be cited in illustration. Early in the Civil War, at Ball's Bluff, on the Potomac, the Union soldiers fell into a trap, and several regiments were cut to pieces. Conkling, then one of the youngest members of the House, delivered a speech in which he described the conflict with such vivid power that it seemed to his auditors as though they could see the battle raging on that desperate field and could almost witness the struggles of the soldiers who fell down the bluffs, to meet death in the waters of the Potomac. That speech gave Conkling national fame, and from that day he was spoken of as one of the great orators of Congress. A friend, speaking to him of this speech, asked how it was possible for him, a man who had not seen the battle, to describe it with such accuracy of detail and with such a perfect word picture as he made of it. Conkling replied that he owed such success as he had won to a diligent study of Macaulay's narrations, especially of Lord Clive's contest in India. The power which he had was acquired, and the patient study he had given to Macaulay in his youth had enabled him, when the opportunity came, to gain such fame as Macaulay himself won with his essay.

The young man bent upon public service should come to it not only with a full mind and after diligent training in oratory, but also with the determination to make himself master of some special province of legislation. A man in this complex age cannot hope for success as a universal genius. He must be a specialist if he would attain the greatest eminence and the largest measure of usefulness. President McKinley was in some respects the most noteworthy example of the specialist in public life. The story is told that soon after he opened his law office at Canton, while he was as yet an untrained youth, he was drawn into a debate upon the subject of the tariff. Pitted against him was a trained, shrewd,

and experienced lawyer, who had at his tongue's end all the arguments in favor of free trade. The older and more expert debater won a seeming victory, but McKinley, though silenced for a time, was not convinced. "No one will ever overcome me again in that way," he said to a companion. "I know I am right and I know that I can prove it." Thenceforth the study of books and men and conditions of industry to attain that end was the chief labor of his life. That labor bore abundant fruit. The first speech he made in Congress was on the subject of the tariff, and thereafter its author was looked to in every tariff debate to be one of the chief upholders of protection. Then, after more years of study and preparation, came the framing of the tariff bill of 1890, which bore his name. That bill made his name a household word and paved the way for his subsequent election to the presidency. Had not McKinley early chosen to become a specialist in legislation, it is doubtful if he ever would have achieved the full measure of fame and influence that came to him.

The indolent man can never hope for enduring success in public life. The newcomer who would achieve such success must not be content with a perfunctory discharge of his duties; he must also resolve to make himself familiar with every phase of each new issue or development affecting the thought and purposes of the nation. This calls for ceaseless and untiring industry, and industry counts for as much as, yes, for even more, in the long run, than, native ability. More than half of President Garfield's success was due to persevering industry. Hard work marked and colored every stage of his public career. He went to the bottom of every subject which engaged his attention, and having gotten to the bottom of it, reached out on all sides for all the facts and opinions he could gather relating to it. Thus, during his later years of service, there was no man in Congress who understood so completely all the ramifications of the vast machinery of the federal government, and when he arose to discuss any question he never failed of exhausting it. Indeed, a collection of his speeches, which probably fill more pages of the Congressional Record than those of any other member, would furnish a complete and luminous epitome of the stirring times of which he was a part. Garfield's thirst for useful knowledge, added to a receptive and observant mind and a reasonable amount of ambition, early gave him commanding influence in the House and a hold upon the people which had much to do with his advancement, first to the Senate and afterward to the presidency.

The man who covets continued usefulness and popularity in public office must always keep in mind the fact that he is the servant, not only of the state, but also of the people. He can never afford to be neglectful of small things. The late Congressman Charles O'Neill, of Philadelphia,

was a man of moderate quality, but he was an ideal local representative, because he had a genius for taking pains. It was his proudest boast that he answered with his own hand every letter received by him, and seldom allowed one to remain over night unanswered. He kept a record of all letters received and answers mailed, with the addresses of his correspondents; and he could at a moment's notice refer to every communication that had passed between himself and any of his constituents during his entire congressional career. It was his invariable rule when Congress was in session to pay a weekly visit to his constituents, and the statement was probably true that he knew and could call by name every voter in his district. If he had received a letter from a person he did not know, the first act after his arrival in Philadelphia was to call on that person and make his acquaintance. Every new family that moved into his district was at once looked up, and every one that moved away received a Godspeed from the congressman. Now and then the other Pennsylvania members tried to play practical jokes upon their colleague. One of them once went to him, saying: "Charley, I have a letter from one of your constituents, asking me to send him some garden seeds. He says he has written to you several times, but cannot get an answer." "What's his name?" Some fictitious name was given. "Where does he live?" An address was named at random. "You can't play any such game on me," said the veteran. "There is no such man in my district, and the house you name is occupied by Peter Jones. I know him well, and attended the wedding of his daughter last fall." Methodical habits of this sort kept O'Neill in Congress for the better part of three decades, and made him before his death one of the oldest members in point of service in the House.

Character is, perhaps, the first essential to permanent success in public life. The man who would win and hold influence and popularity of the better sort, must not only be able and diligent; he must also be honest. By this is meant something more than the honesty that impels a man to pay his debts and fulfill his promises. What is had in mind is the resolute, sterling integrity which temptation cannot influence, nor weakness mark with a blot. It was because Samuel J. Randall possessed this quality that he became and remained for many years the most potent individual force on the floor of Congress. His was the power that lies in absolute integrity, and he would have been a foolish man who approached him with a corrupt or questionable proposal. Many of Randall's colleagues surpassed him in intellectual endowment, but in manly fidelity to public trust he stood in a class by himself. Thus, though he lived out his days a poor man, he grew steadily in prominence and influence, and died rich in the esteem and veneration which come only to the man who has never departed from a pure and noble ideal.

The young man looking to a career in politics must early learn how to say "No." He must have grit and backbone, or sooner or later he will fall by the way. Life, as we all know, is a series of compromises, but in every career there come crises when to palter with conviction means little less than moral suicide. The man who, believing that he is in the right, dares to maintain it, assures himself of the respect of his fellows, and lends strength to any cause which may engage his efforts. What a strong man can do when seeking the enforcement of his honest convictions was, perhaps, never better illustrated than by Thomas B. Reed during his first term as Speaker of Congress. He had previously denounced the existing rules of the House as prejudicial to the interests of the majority, and as Speaker he at once set about their radical reformation. This result he mainly sought to secure by counting as present, such members as from partisan motives abstained from voting, and thus prevented a quorum for the dispatch of business. His action provoked the bitterest opposition, and made him for months the most abused man in the country. He met the storm with entire good nature, but never for a moment swerved from his course. His call upon his party to sustain him, promptly and unanimously responded to, made his triumph complete; but there is good reason for believing that, had his action been overruled by the House, he would have resigned the Speakership, as well as his seat, and retired from public life. This was the resolution which he formed when elected Speaker, and explains, in a measure, the composure and serenity with which he met the abuse to which he was subjected for many months. "It is a very soothing thing," said he afterward, "to know just what you are going to do if things do not go your way. You have then prepared for the worst, and have only to wait and find out what was ordained before the foundation of the world."

The young man looking forward to a career in politics, should, first of all, become a member of the party whose principles tally closest with his personal convictions, and devote his leisure time and efforts, or a part of them, to party work in his district or township. A few evenings each week or month, employed with diligence and good judgment, will bring him under the favoring eye of the party leaders, and point him out for recognition and advancement. This can be achieved without interfering with his regular vocation. A foothold once secured, and his advice and services in demand, the extension of his influence from the district to the county and from the county to the state will be only a matter of time, depending in large measure upon himself. The faculty of supreme leadership is given to few men, but every intelligent citizen has it in his power to exert an influence in politics, for popular government can only be carried on by parties, and every party needs efficient workers. It is a mistaken belief that there is no permanency or legiti-

mate promotion in public life. Continued service counts in politics, as in other callings, and, other things being equal, the post of influence and honor generally goes to the man who has been longest before the people. The late William McKinley for a quarter of a century was almost continuously in official station. There have been few breaks in President Roosevelt's office-holding since he attained his majority. Speaker Henderson has been nineteen years a member of the House. Senator Allison has served forty years in Congress; and a list of those whose length of public service reaches into the decades could be indefinitely extended. While it is a mistake for most young men who are without means to accept office, there are marked exceptions to this rule, and conspicuous examples abound of men who, along with continued and faithful public service, have carried forward brilliantly successful careers in trade and in the professions. The young man who has given proof of special aptitude for public service should not hesitate, on account of honorable poverty, to enter it. Besides, to the man with a distinguished public career to his credit, there are always open gainful opportunities which assure him against want in his old age. Roscoe Conkling left the Senate to become in a day one of the leaders of the New York bar, and Warner Miller went from the same body to the presidency of the Nicaraugua Canal Company.

Let me say, in conclusion, that to the young men now looking forward to a career in politics, the new century holds out greater opportunities for usefulness and distinction than those offered during any past period in our history. The interpretation of the full meaning of the world power and the world opportunities that have, as it were, been thrust upon us during the last three years; the solution of the commercial, industrial, financial, and political problems presented by our new possessions to the southward and beyond the Pacific; the adjustment of our national ideals to a new and wider horizon — all these belong to a future which shall see America the leader of the world's commerce and finance, and the chief molder of its political thought. Such a future baffles prophecy, but it is already clear that its opportunities will be greater than those presented to the man, who, under the leadership of Washington, built the republic and framed the Constitution; so to those, who, led by Jackson, Clay, Webster, and the younger Adams, gave consciousness and coherence to the work of the fathers; or to the generation which, marshaled by Lincoln and his compatriots, rescued the nation from dismemberment and gave it a new and freer birth. And this future, with all its varied and wondrous possibilities, is the common heritage of our young men. They could not have a nobler one.

SUCCESS IN PUBLIC OFFICE

By JOSEPH B. FORAKER
United States Senator, Ohio

NO AMOUNT of education or professional training will make a man successful as a diplomat, as a statesman, or even as a politician, if he lacks the groundwork of common sense, integrity of character, and a reasonable aptitude for public affairs. If he has these qualities, he can succeed in any vocation, other things being equal; and he is likely to drift, or be called, sooner or later, into the public service, especially if circumstances should occur to make a demand for him.

Special professional training may be necessary to make a diplomat in the European sense, but not in the American. No man should be appointed to any place in our foreign service who is not intellectually able, of large experience in public affairs, of good personal address, and a gentleman of culture and refinement. Without these qualities, he would fail in greater or less degree, no matter how much special preparation he might have; but with these qualifications as his general capital, he can best succeed by frank, straightforward, polite, and discreet methods.

THE SENSIBLE WAY TO ENGAGE IN POLITICS

By BENJAMIN F. JONES
Ex-Speaker of the New Jersey House of Assembly

NOTHING can be more important at the starting-point of a young man's active career in the world of affairs than a proper understanding of his relationship to politics and public life. The subject is individually important to the young man, seeing that it may determine his action at critical moments. It is likewise tremendously important to the United States, for the reason that the national government is but a reflection of the correct or incorrect views of its citizens.

It is usual for orators and writers to describe the duties of citizenship as sacred, and to idealize them. It seems far more practical and sensible to urge the view that this country is like a great corporation; that every voter is a stockholder, and that the citizen, individually, has as much right to participate in the selection of officers and the formation of policies, as the member of a business corporation. Pursuing the parallel farther, it may be said that by neglecting to exercise this right, men tacitly, and for all practical purposes, consent to the action of the handful of men who do exercise it. If a business corporation be mismanaged, the stockholders are usually to blame, owing to their lack of interest; if dishonest men are sent as delegates to a convention, the men who stay away from the primaries are as culpable as those who attend.

Let us see if we can get at the root of the evil.

A sentiment seems to exist throughout the country that politics and all that relates thereto should be avoided as discreditable. Some persons have gone so far as to say that no man can retain his integrity and self-respect and be identified with politics. The word politician has come to be used as an opprobrious epithet. This explains many instances in which American citizens, who claim to have an interest in their country, sit calmly by and allow the affairs of their local government to be managed by ignorant and unscrupulous men.

There are thousands of men who would fight, at the drop of the hat, for the honor of their country,—and who, if called upon, would cheerfully offer up their lives in its service, and yet who are not sufficiently interested in its welfare to take part in the management of its affairs.

They know, in a general way, the functions of the National Government and, in a presidential election, can discuss national issues,— but they know practically nothing about local affairs, and have no voice whatever in the selection of candidates or in framing the policy of their party.

A notorious ward leader, when accused of subverting the will of the people and running the machine for his own selfish and corrupt ends, brought the argument to a close by the unanswerable logic of the statement that he wasn't doing his work under cover, and, if the people in his ward didn't want him as a leader, they would come to the primaries and elect somebody else.

Now, there must be a reason for this. The American people must, I think, be making the mistake of looking at the matter from the wrong point of view. Former Attorney-general John W. Griggs grasped the situation very clearly in a recent speech, when he said that people should "beware lest, in gazing at the stars, they stumble at their own doorsteps." The remedy is easily found when you know the ailment. Let every citizen, and particularly every young man, who earnestly and sincerely desires to acquit himself creditably in the work of the world, realize the fact that politics has nothing in common with the stars, but exists only on the level of his own doorstep.

He, and he alone, can make politics more creditable. It is his duty, and, not less, his interest. No matter what profession, trade or business a man chooses, he should take politics into consideration and make it a part of his life-work. It is to the interest of every citizen, engrossed though he may be in his private affairs, to devote a portion of his time to this most important subject. If half the patriotic and intelligent men of the country realized their responsibility as well as their privilege in this regard, bossism and political corruption would be reduced to a minimum. If cold-blooded indifference is the condition precedent to the worst form of bossism, nothing strikes terror to the heart of the self-constituted autocrat of politics except the suggestion that the people have decided to go to the primaries.

In order to entitle a man to vote at a primary, it is necessary that he be enrolled as a member of a party. Without the right to vote at a primary, a man can have no voice in the selection of candidates, which, after all, is a great deal more important than the right to vote on election day. There are many well-meaning but misguided individuals who pride themselves upon the fact that they belong to no party, and who assert with enthusiasm that they will vote for the best man. Such people often find on election day that the "best man" is unfit for the position to which he aspires, and yet they are compelled to vote for that man in order to prevent, if possible, a worse one from securing the office.

Delegates to great conventions have been elected to represent large districts by less than one per cent. of the voting population. A delegate so elected does not and cannot intelligently represent his constituents. A district containing over two thousand people not long ago sent to an important state convention a delegate who received five votes at the primary, including his own.

Representatives of party organizations who have the control of the election districts and the appointment of the election officers, are often elected by a very small fraction of those interested. These representatives in turn elect the head of the organization, who has practically unlimited powers; and it is not surprising that this power, so conferred, is often abused. There is only one way to defeat and destroy the absolute power of the boss, and that is at the primary. Every man should see that he is enrolled on the books of the party to which he belongs, as well as registered to vote on election day.

While it is desirable to be able to intelligently discuss national politics, it is infinitely more important to be familiar with your own election district, to know the details of the local party organization, and thereby have an influence for good among your neighbors and friends by seeing to it that the election officers, the district leaders, and the delegates to the various conventions, are honest, capable men, who will endeavor to creditably represent their districts.

It is also the duty of every voter to become familiar with the rules governing primaries, to see that these rules are complied with, and that proper notice of such meetings is given. If this is done, it will be found that the present deplorable condition into which politics has fallen in many places will be rectified and a new order of things established.

But no man should engage in politics for the purpose of making a livelihood. The successful politician is the one who makes his living in his business or profession and who gives his services for the good of the cause The man who is paid continuously for his services and his interest in politics soon loses whatever influence he may have had. The man who works for others in preference to himself succeeds in politics in the highest and best sense of the term. If the opportunity to get an office comes to a man in the right way, and he believes himself capable of filling the position with credit, he should frankly state his willingness to accept the nomination; but unless it does come in the right way, that is, unsolicited, he would be better off without it.

The perennial candidate is a product of the old American idea of politics and is one of the most pitiable objects in the world. Almost every community has its example of the man who is a candidate upon every occasion, for every office that has to be filled, from poundmaster up. No matter how menial the position, no matter how unsatisfactory

the office, he feels that he must have public position, and he becomes unfitted for every other occupation. Washington is full of these sad-eyed individuals, whose hold upon life is retained solely because of their ill-founded hope that some day they will get an opportunity to fatten at the public crib.

A position as keeper of a forest preserve, paying a salary of ten dollars a month, became vacant, and, within a few days after the information became public, sixty men applied for the position. In a recent session of a state legislature, it became known that a member had the appointment of a page, at a salary of two hundred dollars a year. Over twenty-five applications were received from full-grown men, most of them having large families. One man, with a patriarchal beard, and weighing two hundred and fifty pounds, came to the member so persistently and pleaded so earnestly with him for the office, that in desperation the legislator informed him that the place was for a boy, whereupon, in the most solemn manner, the applicant said that he would wear knickerbockers if necessary, in order to get the job.

Yet in no field of human activity will the returns be larger than in the field of politics, when the politician is a man of integrity and observation. The experience gained in the study of human nature, by coming in contact with people from all walks and conditions in life, will be of inestimable value to any man, no matter what his calling in life may be; and the work done in the interest of good men and good government, will be appreciated by right thinking people. Often the way is opened for exalted positions of power and influence which would never come in any other manner.

Former President Grover Cleveland may be said to have begun his successful public career when he accepted the nomination for mayor of the city of Buffalo, and yet he never would have received that nomination if he had not interested himself in local ward and city politics and striven to raise the standard of his party so that it would deserve success at the polls in local affairs.

If the young man at the threshold of his career determines to do his duty in the field of local politics, without thought of reward other than the consciousness of having performed that duty, he will find that he has indeed "cast his bread upon the waters."

MERIT IN AN OFFICE-HOLDER

By CHARLES E. LITTLEFIELD
Member of Congress, Maine

IN ANY survey of the political field for the discovery of merits and demerits in the matter of a public career, one encounters with gratifying frequency the man who has trained ability, and who is thereby enabled to maintain his foothold. It would be more in harmony with the spirit of our institutions if this class were larger, and better protected in its work. We have too frequent changes of administration for the good of the public service, changes which send to the rear many capable public servants, and induct many inexperienced new ones into office.

The better the men in control, the fitter the public servants, the sooner we shall reach a perfect government. The special training of young men for the diplomatic service would be a step in this general reform. It might, in time, be extended to the public service in other branches, and effect an improvement in the *personnel* of Congress.

An educative effort should be made by the colleges and universities, and encouraged and sustained by the nation, with this object in view. In our great and growing department of state, we have heretofore had merely intelligent men, of good address, to depend upon. We should have men not only intelligent, but adroit, skilled, and clever as well. Let the colleges and universities enlarge their courses in civil government and political economy and bring them up to date. It should be firmly engrafted upon the policy of both political parties, by declaration and by practice, that efficient men will be kept in positions requiring expert knowledge and diplomatic training, regardless of party changes. Of course, it would be inconceivable that this plan should ever become applicable to all offices; as, for instance, the retention in office, by a president of one political party, of the cabinet ministers representing another. But there are official subordinates everywhere who really do the most of the work, and are of the highest usefulness in the public service, who need not be disturbed.

OPPORTUNITIES IN THE CIVIL SERVICE

By JOHN R. PROCTOR
President of the United States Civil Service Commission

(INTERVIEW)

IN OUR national life, the civil service is a factor of great and constantly growing importance. It now gives employment and adequate incomes to over one hundred and eighty thousand persons; and the number is increasing steadily. Our recent territorial acquisitions have, of course, added materially to the necessary executive work of the government, and have made many new positions in the civil service.

Thousands of young men and women have turned their attention to it, asking themselves the question — What kind of a career would the civil service give me, and how can I obtain a place in it? My answer to the first question may seem somewhat trite, for I must state that in the civil service, as in most other spheres of activity, everything depends upon the person. There is a more or less widespread belief that the great majority of government employees, being always subordinate, with work confined to a fixed routine, lose initiative power. Again I say that it all depends upon the person. In the same degree that much of the work is not of the kind likely to broaden the mind or stimulate the higher faculties, it may have a deteriorating effect, but this negative influence will certainly not deter the young man of stamina in the service from self-development. As in any other work that requires system and close application, he will learn the value of order and regularity, and will acquire mental discipline and special training. Many young men and women use the civil service as a stepping-stone. In Washington, lectures are nightly delivered at the Columbian and the Georgetown universities, where the departments of law, medicine, political economy, engineering, and chemistry have so arranged courses and hours for instruction as to accommodate students employed during the day in the departments of the government. Several hundred young men annually graduate from these institutions, and the majority, ambitious for greater rewards than are found in government employ, gradually resign their clerkships, and frequently rise to prominence in other occupations. It

is a common occurrence for a young man to step from the ranks of government employees directly to an important position in a mercantile business.

But more able young men are remaining in the civil service than formerly, and more are seeking places in it, a condition which is due chiefly to the extension of the service and the merit system to our recently acquired possessions. The new territory requires new methods of administration, and thus a man in a position of any authority has, as a rule, more opportunities to demonstrate ability and originality than he has in the service here at home, where all methods have become more or less fixed by years of procedure. This is why so many of our younger employees and others are anxious to serve the government in the Philippines. This desire is encouraged. We are anxious to obtain the best possible ability in the insular service, since the success of the government in the Islands will depend chiefly upon the men who are sent to administer their affairs.

We must keep faith with the Filipinos, whom we have promised an honest, economical, and efficient government, and we must "make our record" in colonial administration before the nations of the world, who are watching us with jealous interest. Our rule will not be merely contrasted with the misrule of Spain; it will be put in the scale with the admirable governments which Great Britain and Holland give to their colonies. In the colonial administration of these countries, there are three rules which should have a dominating influence in our own policy; therefore I set them down, as follows: First, the civil servants are not disturbed by political changes in the home government, the tenure of office being determined solely by good and efficient service; second, the men sent to govern the colonies are selected because of special fitness, and are promoted generally from the small colonies to the larger, after demonstrating their ability to deal with difficult problems; third, the officers charged with collecting the revenue, both internal and customs duties, are promoted to these places after faithful and effective work in minor grades, and are never appointed as a reward for political service at home. The clerkships in the customs and other departments are filled by open, competitive examination. The pay in all cases is commensurate with the duties performed; persons in the colonial service are prohibited from engaging in business enterprises in the colonies.

Under the common-sense business methods suggested by the above rules, Great Britain controls the once turbulent population of Jamaica with no military aid but a garrison of four hundred soldiers, while Spain, using the spoils system, was unable to keep Cuba in subjection with two hundred thousand men. With these two examples looming up conspicuously, no national leader possessed of a grain of patriotism can be in

doubt an instant as to what our colonial policy must be. Failure in the Islands would bring great calumny and reproach upon the fair name of the United States, and would give us a tremendous setback in national progress. We must win new glory in our control of the weakling peoples who have come within our care, and to accomplish this, the government must call to its aid the best and most representative young American manhood.

The material it has to choose from is of the finest kind. We are justified in hoping and expecting that when our system is thoroughly organized we shall excel even Great Britain and Holland in colonial government, for the reason that the training given to young men in this country makes them better qualified to grapple with new conditions than does the training received in any other country. As is well known, young American men are managing many industrial and commercial enterprises most successfully. It is men of this caliber that we want. We must compete with private concerns for their services, and can hope to obtain them only by offering fitting pay, and a tenure of place and opportunities for promotion dependent solely upon efficient work. This we expect to do.

The positions in the insular administration, as in the service generally, are divided into parts, the "classified" and the "unclassified." In the former division are all the places which are subjected to the Civil Service Act and rules. These positions are filled by original appointment, through examination and certification by the Civil Service Board; by promotion of a person in the classified service to a vacant position; by reinstatement of a person formerly in the service; and by transfer from one position to another.

Some of the employees in the classified lists are as follows: All whose duties are principally those of bookkeepers, chiefs and other clerks, draftsmen, engineers, examiners, inspectors, interpreters, janitors, letter-carriers, machinists, messengers, printers, stenographers, and watchmen, all of whom are put in one group. Another group is made up of employees who possess higher general attainments or greater technical knowledge. Among these are: Heads of departments and officers in the municipal service in Manila, physicians, bacteriologists, chemists, veterinarians, civil engineers, cashiers, disbursing officers, and most other incumbents of professional, technical, and scientific positions. Skilled and unskilled laborers are also in the classified division, being employed in the order of their application, after an oral examination on and inquiry into habits and experience.

The Philippine Civil Service Board advises persons able to fill only such positions as those of under clerks, messengers, watchmen, and other minor employees, not to seek service in the Islands. For Americans in

clerical and other places which Filipinos are able to fill, there will be little demand, since the government has promised to employ as many natives as possible. Moreover, the salaries for work of this grade will not be sufficient to warrant Americans to go to the Philippines, nor will the examinations for these positions be held in the United States. For places requiring special training or ability, such as those of stenographers and typewriters, Spanish interpreters and translators, bookkeepers, and customs inspectors, there is a demand, but not so great a one as for Americans possessing professional, technical, or scientific training, or special clerical ability. It is positions such as the latter that offer the best opportunities to Americans in the Philippines. The higher places, however, are usually filled by promotion, the board's intention being to establish a permanent civil service, so administered that a person who enters one of the lower grades may, by loyal and efficient work, secure promotion to the highest offices in the service.

Some of the unclassified employees, that is, those who are appointed without regard to the Civil Service Act, are as follows: The treasurer of the Islands, the auditor, the collectors of customs, the collectors of internal revenue, the director of posts, the head of the bureau of forestry and mines, the general superintendent of public instruction, the members of the Civil Service Board, the chief statistician, the cashier of the collector of customs, the captain of the Port of Manila, one private secretary for the military governor and one for each member of the Philippine Commission, members of the police and fire departments of Manila, guards at the prisons and penitentiaries, and teachers in the public schools.

The teachers were put in the unclassified list on account of the urgent need of quickly securing a large number. These must be either normal school or college graduates, and at the time of their engagement must be employed as teachers. The teachers, however, will sooner or later be put in the classified division. When the condition on the Islands becomes more settled, it is expected that policemen, firemen, and prison guards will also come under the supervision of the board. Indeed, it is the intention to ultimately classify all positions in the insular service, with a system of promotions for filling the highest places. This end will be attained gradually, as, by degrees, a thorough organization of an insular government is effected. Thus, in the civil service ambitious young men will find numerous positions worth aspiring to, and ample opportunities to reach them through faithful and able work. The civil service policy will, in general, be the same in the Philippines, Porto Rico, and any other territory that may come under our jurisdiction. In making appointments, preference is given, other things being equal, to natives and honorably discharged soldiers and sailors.

While examinations are, and will be, the means of giving a man his initial footing in the service, these examinations are not by any means all scholastic. Tests of this kind have been found to answer the purpose in selecting candidates for clerical positions, but there are many others for which a scholastic examination is wholly inadequate. For work which requires high scientific, professional, or executive qualifications, and for work at trades, recent examinations have aimed at bringing to light, not the amount of theoretical knowledge which a man may be able to spread on paper, but the extent of his experience and practical ability.

In the civil service at home, as well as in our new possessions, the merit system, as opposed to the patronage system, is being extended steadily. Since the enactment of the Civil Service Law, in 1883, the government has received very much more effective and economical service from its employees, and grave dangers growing out of the spoils system have been averted. Because the tenure of office has been made to depend upon competency and not upon political influence, the level of capability has been greatly elevated. Long observation has taught me that almost invariably the employee with the most political influence is the most incompetent. Much money has been saved by the abolition of useless offices, and the working efficiency of the heads of departments has been materially increased by the fact that these gentlemen are not now forced to give a large part of their time and attention to importunate place-seekers with political backing.

The number of places in the United States now filled by the Civil Service Board approximates eighty thousand, while those which have not yet been classified amount in number to about one hundred and two thousand. Of the latter, seventy-one thousand are the positions of fourth-class postmasters. Of all of the places in the service, about nineteen thousand five hundred are in the District of Columbia, and one hundred and sixty-two thousand in other localities. The annual aggregate of salaries is now about $104,000,000, which expenditure shows an increase of about $4,000,000, since the Spanish War.

Under the civil service system, the government clerk has practically a life tenure, if his record be unassailable. A young man who enters the service at Washington when twenty years of age is usually paid nine hundred dollars a year, although in some cases the initial salary is seven hundred and twenty, or eight hundred and forty dollars. At twenty-five he is in all probability receiving twelve hundred dollars, and at thirty he ought to be drawing sixteen hundred dollars. The maximum salary for clerical work is eighteen hundred dollars, which is gained in the majority of cases only after a long term of service, the promotions from sixteen hundred to eighteen hundred dollars being much less frequent than those from twelve hundred to sixteen hundred. The candidates for

appointment who are able to pass the examination for stenographers are much more sure of receiving places than others, one-fourth of the demand upon the Civil Service Commission being for stenographers and typewriters. Only a small percentage are used as such, but their technical skill and training give them a superiority over other clerks. Next to stenographers, experienced accountants and bookkeepers are most in demand. Such clerks are useful from the beginning, while others, whose knowledge is chiefly theoretical, require months of careful training.

During the last fiscal year, two hundred and eighty-eight different kinds of examinations were held for vacancies in the classified service. The latter embraces the places in the executive departments; the railway mail service, the Indian service, the several pension agencies, the steamboat inspection service, the marine hospital service, the lighthouse service, the life-saving service, the several mints and assaying offices, the revenue cutter service, the force employed under the custodian of buildings, positions in the sub-treasuries, the engineering department at large, the ordnance department at large, the custom house service, the post-office service, which includes the officers and employees in all free delivery post-offices, the Government printing service, and the internal service. A few confidential employees, such as private secretaries, are exempt from examinations, as are Indians applying for certain classified positions in the Indian service.

There are three general classes of examinations. In the first class are those for about seventy-two per cent. of the positions under the supervision of the board. To pass the examinations in this class, a common school education is a sufficient preparation. The positions are those of clerks in the departments, in the railway mail service and post-office service, letter-carriers, and some others. These examinations are divided into three grades. The third grade requires merely the ability to read, write, and solve simple examples in whole numbers. The second grade requires a somewhat higher general education, including a knowledge of simple operations in common and decimal fractions. In the first grade is required a knowledge of the use of the English language in business correspondence, and such mathematical operations, including interest and discount, as are necessary to solve ordinary business problems.

In the second general class of examinations are about two per cent. of the whole number. These embrace, in addition to general education, special or technical knowledge, such as is needed to fill the positions of stenographers, draftsmen, weather observers, examiners of the Patent Office, civil engineers, and others. Most of these positions demand scholastic ability above the average, as well as considerable special training and experience.

The third general class are the trade examinations, embracing about twenty-two per cent. of all examinations. They involve no scholastic test. Applicants are accepted who prove themselves satisfactory in ability as workmen, in experience and in physical qualifications. Only men in sound health are employed.

About fifty thousand persons are examined annually in the classified service, of whom three-fifths are applicants for places in the departmental service; one-fifth for post-office places, and about one-eighth for the customs service. About one in four of those who take the examination fail to obtain the mark of seventy per cent. necessary for a place on the eligible list. But the gaining of this place is no assurance of appointment, since only a small percentage of those who pass the examinations are selected. Candidates whose marks are highest are chosen first. The term of eligibility is one year.

Since a great many women seek employment in the service, a statement as to their chances of appointment as compared to those of men may be instructive. This comparison is best brought out by statistics. The records of the last decade show that during this period 40,928 persons passed the examination for post-office clerks, which are the only places in that department for which both sexes may compete. Of this number, 8,640 were women. About 1,300 were appointed, 352 of whom were women. For all positions for which both men and women are eligible, 77,445 persons, of whom 16,832 were women, have passed the examinations during the last ten years. Through these examinations 17,844 persons have been appointed, the women among the appointees numbering 1,663, or a little over nine per cent., while the proportion of appointments among the men has been about twenty-six per cent. For positions for which men are not eligible, 7,381 women have passed the examinations, and 1,813 have been appointed. Altogether, 24,213 women have passed the civil service examinations during the last ten years, and 3,476, or about fourteen per cent., have been appointed.

THE DIPLOMATIC AND CONSULAR SERVICE AS A CAREER

By JULIUS ST. GEORGE TUCKER
Former Consul at Martinique, W. I.

IN THE consular service of the United States as at present constituted, a young man cannot expect to find a distinctive and continuous career. With a change in the administration of the Government, the consuls of the previous administration are recalled, and new ones are appointed. Places which require, for their proper filling, high character and special training, and which are among the most important in our government, are controlled entirely by the exigencies of politics. As a consequence, many of the consuls are appointed without regard to their efficiency, by reason of which the United States loses millions of dollars in trade annually. There are men in this branch of our service who are far from a credit to the country; yet, as a rule, the men are superior to the system. An American is far more quick-witted and ready for an emergency than an Englishman or a German; at many of the most important posts our consuls easily excel those from the nations of the Old World. At posts like Liverpool, Birmingham, Manchester, Berlin, Leipzig, Hamburg, Paris, Bordeaux, Vienna, St. Petersburg, and others, the service, although so handicapped by rotation in office, surpasses the best that Europe has been able to furnish. The consuls in these commercial centers are keenly alive to our trade interests, emphasizing the conviction that with good men everywhere, we can and have done much for American exporters. Men like these would undoubtedly hasten our commercial conquest of the world.

But in the more remote and isolated places in the service, such, for example, as those in the French and German colonies and Latin-American countries, some of the American consuls do not exert the characteristic genius of this country; they strive to educate neither the home merchant, nor the foreign consumer, with the result that the trade of these regions is monopolized by our European rivals.

The leading consular offices, in which salaries are adequate, always have a staff of trained subordinates; when a new consul arrives, he is not confronted with the task of immediately learning all the details of his office. But when a new man goes to such posts as Barcelona, Martinique, or Pernambuco, he finds his predecessor ready to depart, and an office boy as his sole instructor, and sometimes not even a boy. Very

often the consul knows not a word of either French, Italian, or Spanish. The manners and customs of the people are strange and repulsive to him; he is at heart more of a foreign critic than a trader. In his loneliness and lack of sympathy with his environment, he is likely to resort to drink, if he be inclined to that habit, and is then, of course, a positive obstacle to international trade. He is removed or replaced by another who very frequently is no improvement. Yet a dollar of commerce in these places is worth as much to us as a dollar of commerce in the large marts of the world. Indeed, the struggle for trade in the near future among the great powers will take place in these yet undeveloped regions.

It behooves us to have efficient consuls at all posts. Among our lawmakers there is a growing appreciation of this fact, as is indicated by the bills before Congress to reorganize the consular system on a basis of appointment for merit instead of for political reasons. The bills, one of which was introduced by Representative Adams in the House, and the other by Senator Lodge in the Senate, differ somewhat in essentials. The latter probably has the best chance of becoming a law. It provides for a classification of consuls-general and consuls as follows: There shall be three classes of consuls-general,— four in the first class at salaries of $8,000 per annum each; thirteen in the second class at $6,000 per annum; nineteen in the third class at $5,000 per annum.

The staff of consuls is divided into six classes: —

35 in the first class at $5,000 per annum.
35 in the second class at $4,000 per annum.
60 in the third class at $3,000 per annum.
40 in the fourth class at $2,000 per annum.
30 in the fifth class at $1,800 per annum.
50 in the sixth class at $1,500 per annum.

In all the above classes, consular fees will be abolished, such moneys to be accounted for and paid into the national treasury at Washington. It is provided that six months after the passage of the act, the President shall begin to classify the consuls. All commercial agencies are to be abolished. All consuls-general and consuls will gradually be examined within two years after the passage of the act, and those who fail to pass will be dropped, but no examination will be held within six months from the passage of the act.

Examinations will be conducted by the Board of Examiners composed of the Civil Service Commissioners, the Secretary of State, or one of his assistants, and one of the consuls-general of the first class. Examinations will embrace at least all subjects required in the case for original appointment.

When a vacancy occurs in any class above the sixth, members of the class next below are eligible to it. The President may name the Secretary of State, or some other person in the Department of State, any consul-general or any consul, to act with the Civil Service Board as an examiner. The board will hold public examinations at stated times and places. When a vacancy occurs in the sixth class, a list of the applicants who have passed the examination must be furnished.

No one can be eligible who is under twenty-one, or over forty-five, years of age, who is not a citizen of the United States, or who is mentally, morally, or physically disqualified to perform the duties of a consul. The scope and measure of the examinations will be determined by the board, but among the subjects will be included the French, German, or Spanish language. The applicant will also be examined as to his knowledge of the resources of the United States, especially in reference to increasing the trade of the United States with foreign countries.

Any person having served with efficiency in the Department of State for two years next preceding, will be eligible for an appointment to a consulship without an examination. Any person having served with efficiency in the consular service abroad, may be assigned to duty in any bureau in the Department of State, but not for more than one year at a time.

It will be seen from the above brief outline of this bill that an effort is being made to divorce the consular service from politics. There can be no reform in the service until this separation is accomplished. How far the act will accomplish it, depends upon the honesty and sincerity with which the civil service rules are administered.

The bill possesses some defects; among them the age limit of applicants. Many of our best consuls are now over forty-five years of age. It would be a grave mistake to deprive the service of their long experience and varied attainments. More than half of the posts are occupied by men who have reached middle life, whose services we should lose soon after the above act should go into effect. No provision is made in the bill for retiring consuls from the service upon a pension after having served a number of years, or for other causes, similar to the law governing our army and navy officers. The act, however, must secure a decided reform in the service, providing, as it does, proper classification and adequate salaries, and demanding intelligence and training on the part of all consuls. The new system which it must inaugurate will open a wide field for educated men, who are ambitious to serve the country by extending its commerce.

While the number of United States ambassadors and ministers is, of course, much smaller than that of the consuls, and few can hope to attain these places, they offer rare opportunities for distinguished service to

men with the high degree of ability required to fill them. We are gradually gaining the commercial supremacy of the world and are making enemies on this account. War will threaten us, and for escape from it, we must look, not to Congress, but to our diplomats. If we are to remain at peace with the world, we must use caution in our dealings with other nations.

We have been singularly fortunate in never having suffered international humiliation. The "Trent affair" was the nearest approach to it. It is impossible to say what might have happened had not England's interests been identified with ours in the Spanish-American War; the whole continent of Europe, like a tiger, was ready and eager to spring upon us. Do we not hear to-day of the same feeling and combination against us in the commercial warfare between the nations? We cannot hope to prosper without incurring hatred.

Our great danger is born of our great strength. Our nation has become a giant, the opposition to which, when not manifested in open hostility, will thrive by means of subtle and underhand misrepresentation and deception.

The greater our fleet, the more surely will international diplomacy seek to array our neighbors against us, by innuendoes in a "canaille" press, and by other means. We are too young and too unphilosophical to bear with equanimity such humiliation as Russia recently imposed upon England in Chinese diplomacy. Had we been playing a direct game with Russia for northern China, as England did, and lost, and Congress had been in session at the time, who can doubt that our old friend would have been assailed by a vitriolic resolution, and a dozen or more hot-headed speeches.

England's trained diplomacy finally won in the Venezuelan imbroglio, by quietly accepting arbitration. In the future such questions must multiply, and with Congress inclined to emotionalism, and possessing the constitutional power to ratify all treaties, it becomes inevitable that we must have the best trained diplomatists in the world. They must possess in preëminent degree, patience, subtlety, humility, and tact, qualities which are made conspicuous by their absence in our national character.

Russia, though far less progressive than England and America, has the most highly trained and successful diplomatic corps in the world. Exceptional are such consummate masters of the craft as the late Mourivieff and the present Lamsdorff. Russia's great victories in China are the work of such men. So thoroughly organized is the diplomatic machine, that when Mourivieff suddenly died, there was not a moment's hesitancy or a jar in the course of diplomatic action. The great Russian empire, stretching across two continents and driving a military railway

from its capital to the great ice-free port of the Pacific, and eating into the heart of China, crippled at the same time by a depleted treasury, has succeeded in keeping the world at bay. Never has there been witnessed such diplomacy.

Again, witness Germany, in the very heart of continental Europe, with danger at every door. Her great army, the work of von Moltke and von Bismarck, protects her,— but without trained men like von Bülow, who edits the speeches of her impetuous medieval emperor, she must have been lately the battle-ground of all Europe. The condition is much the same in France. Her peace to-day is more largely due to the skill of men like Delcassé and Hanoteaux than to the fear of her doubtful army.

In character and ability, no one will dispute that men like John Hay are the equals of the above-named diplomats; but in knowledge of international precedents and in understanding of the characters, motives, and aims of men high in the councils of foreign governments, our American diplomats are by no means the equals of those of Europe.

THE UNITED STATES SOLDIER AND HIS CAREER

By LIEUTENANT-GENERAL NELSON A. MILES
Of the United States Army

THE opportunities for young Americans in the regular army have been considerably broadened by the events of the last few years. The Spanish War was fought to some extent with the aid of volunteers, hastily enlisted, or taken from the state militia, but the responsibilities which the war imposed upon the country made a larger regular army a continuing necessity for the future. The volunteers who were enlisted for service in the Philippines have finally been mustered out, and the regular army will hereafter undoubtedly be at least three times as large as before the war with Spain. The Army Reorganization Act, passed at the beginning of 1901, provided for a regular army of one hundred thousand men, if required. It was thought by some at the time that this force would be necessary. The success achieved in restoring order, however, has resulted in limiting the regular army, for the present, to about seventy-six thousand

men. But the President has full authority to increase the number to one hundred thousand.

The increase in the size of the army, and the new responsibilities which the United States has assumed in the Orient, are likely to give a heightened prestige to the army as a profession. The soldier's career has always been recognized as one of the most honorable, but many years of peace, with a military establishment insignificant in size, kept the uniform from occupying a prominent position in the minds of the people. The probability of active service, due to the unsettled conditions in our new possessions, indicates that there will be more frequent changes in the service than formerly, and greater opportunities for distinction. More than this, the reorganization law which has been passed by Congress adds considerably to the number of the higher places. It provides more officers in proportion to the number of regiments than were called for under the old organization.

The life of an officer of the army has many advantages and some charms, but it also has serious drawbacks. A discussion of the subject would be incomplete which did not refer to the disadvantages as well as the advantages of military life.

Our service is quite different from that of other nations. For instance, in the British service it is not difficult for a well-bred, intelligent, ambitious young man to enter the military service and obtain a commission. The course at Sandhurst is two years, whereas at West Point it is four years. The Sandhurst course, while not so rigid in abstruse mathematics as ours, appears to develop admirably the manly qualities of the corps. I was very favorably impressed with the appearance of the latter on a visit to Sandhurst with Lord Wolseley. The institution is located in one of the most charming spots in England. The buildings, while not splendid, are solid, substantial, and healthful. The quarters for the young men are ample, with an atmosphere that I should think would promote clear brains and strong physiques. The walls are adorned with pictures of the heroic achievements of the British army and with portraits of Wellington, Marlborough, Wolfe, Clive, and other leading British soldiers. These decorations have, of course, a strong inspirational value. The enlistments in the British army are wholly voluntary, and the men are imbued with great pride and spirit. From drummer boys to field-marshals, they are proud to wear the uniform of the British army and to march to the music of the grenadiers.

Although the American army has been developed on different lines, it is, perhaps, more efficient, and the incidents of its origin and growth are full of interest. Upon the organization of the Government under the Constitution, the army consisted of eight companies of infantry and four batteries of artillery. Two years later, the force of infantry was

increased to two regiments, consisting of twelve companies each. General officers and subordinate staffs were then provided for. It was not until 1796 that an adjutant-general was placed on duty at the seat of government, that officer being detailed from the line. The office of adjutant-general of the army was not regularly established until some fifteen years later. It was created by Act of Congress approved March 3, 1813. After the creation of that bureau, the number of staff bureaus gradually increased, until we now have, in addition to the Adjutant-general's Department, the Inspector-general's Corps, the Bureau of Military Justice, the Signal Office, the Quartermaster's Department, the Subsistence Department, the Medical Department, the Pay Department, the Ordnance Department, and the Corps of Engineers.

When coördinated under one authoritative head, these staff departments form an organization possessing great efficiency. While it should be the constant endeavor to secure the maximum of strength and efficiency in an army organization, the latter may become so strong as to endanger the supremacy of the civil government. In this case the strength of the army should be reduced simply by decreasing the number of soldiers, not by distributing and paralyzing their power. An army may be limited in numbers, but in organization and efficiency it should be perfect.

Among officers who have won glory for themselves and for our country through their service in the army, the first names that occur to every American are those of Washington, Greene, Wayne, Jackson, Harrison, Brown, McCoomb, Scott, Taylor, McClellan, Halleck, Grant, Sherman, Meade, Hancock, Sheridan, Thomas, McPherson, Sedgwick, Sumner, Kearney, Fremont, Lyon, Canby, and others.

It is noteworthy that the reputations of these great soldiers were gained through long as well as brilliant service. In no case was fame the result of any single deed, however heroic. In fact, soldiers have performed single acts of gallantry surpassing, perhaps, any individual deed of our greatest military leaders. In the records of the army are many obscure examples of heroic conduct. A single instance will serve to illustrate:—

In Ohio was a poor stockade called Fort Stephenson. Its armament consisted of one cannon, and its garrison was composed of one hundred and sixty men, commanded by Major George Croghan, a young officer of twenty-two who was born near Louisville in 1791 and came of fighting stock, his father having been an officer in the Continental army. Graduating from William and Mary College in 1810, he entered the army, was in the battle of Tippecanoe in 1811, and a year later was made captain in the Seventeenth Infantry. With this rank he served under Harrison, in 1812 and 1813, and so distinguished himself in a sortie from Fort Meigs

that he was appointed aid-de-camp, with the rank of major, and assigned to the defense of Fort Stephenson. Lest Tecumseh and the Indians, who were coming across the country from Fort Meigs, should make a flank attack, Harrison had authorized Croghan to burn the fort and retreat. This he did not do. "We are determined to hold this place," said he, "and, by Heaven, we will!" Harrison thereupon dispatched an officer to relieve him. But Croghan went to headquarters, carried his point, and when, on August 1, the English commander summoned him to surrender, the young major sent back a stout defiance. The next day the bombardment began, and toward afternoon an assault was ordered. The English soldiers, in three columns of one hundred and twenty men each, were to attack on three sides. The Indians were to storm the fort; but as the latter came out of the woods a steady and well-directed fire from the fort drove them back. The British troops, thus left to fight alone, came on bravely to the very gates, made a desperate assault lasting two hours, and then retreated, with all the officers and one-fifth of the men killed, wounded, or missing. A wave of tremendous enthusiasm rolled over the country as the result of this victory; but who to-day knows anything of the personality of Major Croghan?

The army during most of its history has been on the frontier,—in the vanguard of civilization. It has penetrated the forests, crossed the plains, and scaled the mountains, carrying the flag of our country in advance of the hardy pioneers, the miners, the hunters, and the home-builders, who have spread civilization over the vast continent of America. In our great wars, the army's fortitude, patriotism, and sacrifice shine brightly on the pages of history.

Those following a military career are subjected to many privations and hardships, yet every true American is proud to be in the service of the enlightened people of the United States. I regard the boy who receives an appointment to West Point as very fortunate. The rigid discipline and the physical training make him a fine specimen of man, both in mind and body. High ideals of honor and loyalty are planted in his bosom. I believe that there is no manufactory of manhood in the world so effective in turning out a highly finished product as is West Point. But the raw material must be good, or it will not be received at the Military Academy. The boy who hopes to enter must be perfectly sound physically and free from all blemish; he must, moreover, be able to show that he has a good and well-informed mind. He must have a thorough understanding of arithmetic, be able to read with intelligence, and write and spell with accuracy. The test in arithmetic is particularly severe, and unless the boy has a good mathematical mind he will not be able to pass the entrance examinations, or will fail to hold his own with his class and will be dropped. He must also have considerable knowl-

edge of the other common branches of an English education. The pay of a cadet is $450 a year. He is not permitted to receive money or any other supplies from his parents or friends without the sanction of the superintendent. This rule is rigidly enforced, for the purpose of eliminating among the cadets all distinction arising from the varying social positions and degrees of prosperity of their parents. The course at the academy is four years.

When the cadet graduates, he is assigned to either the infantry, the artillery, the cavalry, or the engineering corps. The branch of the service he enters is determined by his standing in his class upon graduation. Those who are at the head have their choice and usually select the engineering corps. The infantry is regarded as the least desirable branch. The young graduate is a second lieutenant, with pay of $1,200 a year at the beginning. He is very likely to be assigned to some remote garrison post, where life in time of peace is one of monotony. Unless a man has great enthusiasm for the profession, or possesses resources within himself, he is in danger of sinking into a state of mental apathy, or of becoming something of a martinet. Many officers resign to enter civil life, and find, as engineers or professors, more freedom and larger incomes than can be enjoyed in the army. Yet the life is full of compensations. The West Point graduate has a high social position, and need have no worry over financial matters or the solution of the bread and butter problem. In time of war he is, of course, supreme, and wins from his fellow-men a degree of gratitude and adulation that never comes to followers of the professions of peace.

Throughout its history, the army has maintained a high standard of morals and integrity, though at times there have been influences which would seem to dim and mar the luster of its service. Devotion to the welfare of his country is as sacred to the true soldier as life itself. Undoubtedly, the army received its greatest inspiration from the high character of Washington himself. Its achievements will live in history as long as noble deeds shall be honored and revered. Its purpose has been to maintain the institutions established by the Fathers, to repel the onslaughts of savage ferocity, to give protection to the weak and innocent, to guard the well-being of the people of the United States in every quarter of our vast territory and in foreign lands.

Military life is one of constant labor, study, and rigid and faithful devotion to duty. Our soldiers have never failed in their duty. I am confident that they never will, and that the present high standard of honor and loyalty will be always maintained.

A CAREER IN THE NAVY

By WINFIELD SCOTT SCHLEY
Rear-Admiral United States Navy

I SUPPOSE that nine out of every ten American boys would like to go into the army or the navy. This speaks well for the boys. It means that they have a wholesome spirit, the American spirit. And as a matter of fact the training at Annapolis — it is the same at West Point — is a fine thing for a boy who has good stuff in him. It strengthens and solidifies his ideas of honor. It makes a gentleman of him, — I mean a gentleman in the true sense of that fine but somewhat abused word. Over in London, a few years ago, a prize was offered for the best definition of a gentleman, and the one for which the prize was awarded is this: "A gentleman is a knight whose armor is honor and whose lance is courtesy." This may sound like a somewhat fanciful definition, but it sums up the matter pretty well, I think. The young man who starts out with an armor of honor and a lance of courtesy is well equipped for life's battles. It may be that he will not win the success which comes from trampling on others, but he does not care for that kind of success.

In addition to his high ideal of honor, the Annapolis cadet, of course, acquires a great deal of valuable information about guns and tactics and methods in general of subduing the enemy; but he learns something even more important than this, — he learns how to subdue himself. Winning a naval battle is often easier than winning a battle against one's own tendencies and inclinations, and as important for the latter as for the former is strict training and discipline in the period of youth, when lessons well learned are least likely to be forgotten, and character is forming for good or ill. This is why I regard the boy as fortunate who is able to go to the Naval Academy at Annapolis.

The great majority of boys cannot go, and it is not difficult to find consolation for them. The naval career has, besides its advantages and attractions, some serious drawbacks. The boy or young man who thinks that he could be happy if he could enter the navy, should remember that the naval officer must be absent from his country, his home, his wife, his children, many of his friends, — in short, from almost everything he holds dear, — for nearly half of the long years of his active service. Yes, of

course, there is the home-coming, but when one spends two or three years sailing the seas or lying at anchor in foreign ports, the anticipation of home-coming is rather too long drawn out.

In fact, the naval officer has no permanent home. The care and rearing of his children devolves almost entirely upon their mother. This is hard on her, and is a responsibility in which he would very much like to have his share. If he has boys, he finds, when they grow up, that he cannot give them as good a start in the world as he would like to, because he has so few shore connections. The navy is, of course, no place for the young man who is ambitious to become rich. It gives one nothing more than a comfortable living. In times of peace it does not matter how restless or energetic or ambitious he may be as far as advancement is concerned. He must wait for promotion, and usually must wait long. It is true that in war times the conditions are very different, but war does not come every year, nor every decade, and I think that as time passes it will become of rarer occurrence. So the naval officer may never get an opportunity to prove to himself and to others that heroism and other great qualities have been slumbering in his bosom. Every cadet who is graduated from Annapolis dreams of glory, and I feel sure that there is not one who would hesitate an instant in the face of duty, however perilous. But to only a few does the great chance come. Another thing I want to say is that I am unalterably in favor of giving the men of the navy every opportunity for gaining commissions. Upon this subject I recorded my opinions in an official report published in 1886 or 1887, while chief of the bureau of equipment. The man behind the gun in the navy ought to have the same privilege as his comrade in the army to gain a commission. I am in favor of granting to him, after gaining his promotion, the opportunity of a course of, say, two years at the academy, that he may acquire sufficient knowledge of mathematics and other sciences not to be at a disadvantage with the graduate of the naval academy in matters of professional technic.

I do not pretend to discuss the details of the plan that should be adopted; these may be left safely to the authorities; but I have thought, for many years, that the men of the navy who are so intelligent, so capable, and so true, ought to have the same chance of reaching its highest grades as would be open to them in business or professional life in civil employments on shore. A man or a boy who undertakes a naval career ought to be able, through industry, meritorious performance of duty, and skill in his profession, to reach a commission, and, by application to his duties, good conduct, sobriety, or heroic performance of service, to be advanced, afterward, from grade to grade to the highest.

It is possible for men in each of several European navies to attain commissions when their actions in battle enhance the national prestige,

or add to the nation's grandeur. Indeed, the most courted of England's decorations, the Victoria Cross, is found alike on the breasts of the sailor and the admiral. In Germany, the Iron Cross is worn as worthily by the sailor or the soldier as by the admiral or the general.

I have a great fondness and admiration for the men of our navy, after a service with them extending now well on to forty-five years. They are always courageous; and, no matter how perilous the service to be done, they are always ready to undertake it. In battle they are valiant; but, the struggle over, they are as gentle as women to those who were their foes. Such men would honor commissions, as they have honored their country in every war and on every sea; and I think that, when these commissions have been won, we ought, in all fairness, to give them the chance of that higher training which will place them, in professional equipment, on as high ground as the graduate of Annapolis enjoys. I feel sure that, under such circumstances, the men of our navy would sustain themselves with credit to the service and to the country.

Once establish the fact that the way is open from the forecastle to the quarter-deck, and the details of promotion will soon adjust themselves; and I feel sure that the men of the navy will not be found wanting in ability to reach the highest places, by improving every opportunity for distinction. I think, further, that the result would be good in bringing the navy closer to the people of our country. No man who enters the navy should, for that reason, lose any of the chances of rising that would be his in civil employment. This is more in harmony with the true spirit of our institutions, which offer to every man opportunities for reaching any position in our land through talent, industry, and worthiness.

While, as I have said, the highest places in the navy should be opened to all Americans of good character and ability, yet the course at the Naval Academy at Annapolis gives the young man much instruction and knowledge that could not be obtained in years of experience and study by himself. A young man who receives an appointment to Annapolis has a well-defined and very honorable career provided for him. His position is in many respects an enviable one. As is well known, the appointments to Annapolis are made by the President and by Congressmen, who usually determine the fitness of candidates by holding competitive examinations. The boy who, after passing a most rigid physical examination, gains the highest marks in the mental test, receives the appointment; he must then pass an entrance examination before he is made a cadet.

The Annapolis course covers a period of six years, four at the academy and two at sea. At the expiration of the sea service, the cadet returns to the academy for final graduation. The candidate must at the

time of examination for admission be between the ages of fifteen and twenty, and well equipped mentally and physically. He cannot be undersized, or in any way deformed or afflicted with any disease or infirmity which might render him unfit for military service. He must be unmarried and be able to pass an examination in reading, writing, spelling, arithmetic, geography, English grammar, history, particularly that of our own country, algebra through quadratic equations, and plain geometry. Candidates who have passed the physical and mental examinations receive appointment as cadets and become students of the academy. Each cadet is obliged to sign articles binding himself to serve in the United States Navy for eight years, including the time at the Naval Academy. The cadet receives a salary of $500 a year beginning at the time of his admission.

THE POLICEMAN

By GEORGE W. McCLUSKY
Former Chief of the Detective Bureau of the New York Police Department

Like the soldier, the policeman must be able-bodied, intelligent, brave, and calm, but, above all, he must be a man of good judgment. He is invested with what might be called "unwritten orders," and has much discretionary power. Being an essential feature of municipal life, it is the policy of every city government in this country to attract good men to its police service. Salaries are adequate, and there is the prospect of a pension at the end of a certain number of years, usually twenty-five or thirty, of active service.

No man who lacks courage and steady nerves need hope for success in the police service. The policeman's courage must be the kind that prompts immediate action; his calmness of temperament must be sufficient to always restrain him from undue precipitancy. In some quarters of the great cities, particularly in those parts where excitable foreigners swarm, the policeman is guide, philosopher, and friend to all. He protects the weak and admonishes the strong, and so wins gratitude, respect, and hatred. All kinds of disputes are referred to the policeman to settle, and he does settle many with a judicial wisdom, directness, and simplicity that would do credit to men who sit upon the bench. The policeman comes in contact with the most varied types of humanity. Either in or out of uniform, he is a marked man. He is always on duty — always a policeman. It is unnecessary to go into details of the policeman's daily life. Many elements of danger lurk in his path. He

must fight and conquer desperate characters; often, single-handed, he attacks a gang of men as merciless as wolves in winter, men who have no appreciation of the courage of a foe. Unfortunate and helpless creatures fall under his care, and stray waifs he treats with the tenderness of a mother.

A brief survey of the police department of New York, its opportunities and requirements, may be instructive, and, as almost all of the police departments of the country are conducted on similar lines, it will serve as a general guide to those who contemplate entering the service. Each municipality fixes, of course, its own salaries and pensions. A man desiring to become a policeman in New York, must be appointed according to law, under civil service regulations, between the ages of twenty-one and thirty. At the age of sixty-five he must retire from service; but, after having served twenty-five years and having attained the age of fifty-five, he is allowed to retire on a pension equal to one-half of his pay at the time of retirement. The policeman's pay at the beginning is eight hundred dollars a year. This amount is increased at regular intervals during a period of five years, until it reaches fourteen hundred dollars, which is the maximum pay of the ordinary patrolman.

The applicant for a position as a policeman must first have been a citizen of the United States for one year and must be able to read and write the English language understandingly. He must be at least five feet eight inches in height; must have a chest measurement of at least thirty-four and a half inches; and must weigh not less than one hundred and forty pounds without clothing, and be under thirty years of age. The first test to which he is subjected is as to his mental capacity; then he is put through a test of muscular strength, and lastly, the Board of Police Surgeons pass upon his general physical qualifications. All of these examinations are rigid. If the candidate be successful in passing them, he is entered in the school of instruction, which is in charge of a sergeant of police. He there learns the rules of the service and also the manual of arms of the United States Army. He is then appointed on probation for three months and must "break in" with a regular policeman at night, wearing citizen's clothes. At the end of the probation period he is again examined by the doctors, and if he passes, and no complaint has been lodged against him, he begins regular routine duty.

During the policeman's first few months of service, dangers much more subtle than those I have described threaten him. Many persons are attracted by his brass buttons, and these he must avoid religiously if he would not precipitate his own downfall. The over-friendly saloonman, it is not wise to know too well. Also innumerable flatterers, who have selfish interests to promote, seek by cajoling him to create within the green policeman an undue sense of his own consequence. It

is therefore necessary for him to steer a discreet middle-course. It is almost superfluous to say that drink is the policeman's greatest menace.

The young policeman who tempers ambition with discretion, stands a better chance of promotion than many who are overzealous. It is not the policeman's duty to fill the station-house with prisoners so much as to keep order on his "beat." Many policemen have won promotion for bravery in life saving.

When the policeman is advanced, he becomes a roundsman, at a salary of $1,500 a year. He goes on patrol with the men, and is responsible for their conduct, reporting to the sergeant. The next step in the promotion of a policeman is to the place of sergeant. In this position he receives $2,000 a year, and is responsible for the entire precinct during absence of the captain. Much of his work is clerical, but, in case of fire, he turns out with the men and has charge of those of his precinct. He is also in command at the station-house when the captain is away. A police captaincy is a position of considerable importanee. The salary is $2,750 per year. The captain is responsible to his superiors for the condition of the precinct in his charge. He is held responsible for the abatement of all nuisances and the general conduct of the citizens of his precinct. The next grade is that of the inspectors, who receive $3,000 a year, and each is responsible for several precincts.

The detective branch of the Police Department involves the exercise of more sagacity than is required of the ordinary patrolman. The detective must be able to think and act quickly, to seize an opportunity. The truth of the old saying that "Conscience makes cowards of us all" is the detective's best aid. Ninety-nine men out of a hundred are more honest than dishonest. They are at home in the legitimate walks of life, and only startled strangers when they penetrate the realm of crime. To hunt such men is no more difficult than to run down an animal in a strange wood.

CIVIL ENGINEERING AND ITS OPPORTUNITIES

William Barclay Parsons, chief engineer of the Rapid Transit Commission, of New York, speaks with authority on all matters pertaining to his profession. He says: "Civil engineering is one of the most progressive of professions, offering at the present time greater opportunities to young men than ever before. Especially is this true in our own country. The American engineer, unhampered by tradition and obliged to satisfy the demands of unusual circumstances,

has introduced into every branch of the profession new methods, marked by a rigorous application of scientific principles, simplicity of detail, and great practicability.

"Railroads still offer the widest field for the younger engineer. In the United States every year, several thousand miles of track are constructed, in addition to the double tracking of single-track roads and the reconstruction of lines to bring them up to the modern standard of efficiency. The custom of consigning the maintenance of railway property to engineers is rapidly extending among railroad managers. On one of the great trunk lines the rule of placing educated engineers in responsible positions has been carried to such an extent that for appointment to any office of trust except in the traffic department, the applicant must be an engineer. The wisdom of this course is being appreciated more and more by other companies, who are applying accurate and scientific methods to the maintenance of their properties, and so opening many opportunities to young engineers.

"The prospect for the young man in bridge building is not so bright. The old practice, still in vogue in Europe, of having bridge designs furnished by individual engineers, has been almost entirely abandoned in this country, in favor of letting bridge companies or manufacturers submit their own plans, subject to such conditions and specifications as the bridge buyer imposes. The bridge engineer of to-day, therefore, is almost invariably a manufacturer, and the young engineer who desires to follow this branch with success must connect himself with one of the bridge companies, and, in proportion to his ambition, must be possessed of commercial ability and, if possible, of financial backing. The principles of bridge designing and construction are an essential part of the knowledge of almost every class of engineers, and especially to those who follow railroading, where, by necessity, ample opportunities are afforded for the prosecution of this most interesting of studies.

"Engineers a hundred years ago were largely occupied in canal construction, but the development of railways has put an end to the building of canals in the original way, and, in some localities, has even led to their abandonment. The canal of the future will be constructed on a very much larger scale than the canal of the past. It will be of great size, capable of floating not merely the typical canal-boat, but the full-sized ship of commerce. It will be an artificial river.

"The problems of harbor and river improvements are well worthy of the consideration of engineers. In this country, where large areas lying remote from the coast produce great quantities of wheat and other staples which do not demand rapid transportation by rail through long distances, a more perfect development of water carriage is very important. Fortunately, our great inland seas and large rivers already present the

natural foundations for the system. At present, their care and improvement are vested entirely in the corps of engineers of the United States Army, who are inclined to devote themselves to the construction of new fortifications and coast defenses and leave the improvement of our water ways to civilians. The study, then, of harbors and rivers, and the best means of rendering them most serviceable, offers a profitable field to the civil engineer.

"Another branch of engineering which is steadily widening its scope of utility and need is sanitation. As the towns multiply and grow into cities, the disposal of all matter included in the term sewage becomes a great question, increasing in seriousness as the locality is removed from free tide-water, or is prohibited from emptying its drainage into flowing streams. For all such cities there must be devised a plan of sewage, the details of which will largely depend upon the natural or artificial features of the location in question. The sanitary engineer in this country is already recognized as a necessity, and his importance will be still more deeply appreciated in the future. The ability to furnish our large cities with an abundant supply of pure water is a question equally as important as that of sewage disposal, and as our cities increase in number and size, and the possible sources of supply grow correspondingly fewer, there will come a greater demand for capable engineers.

"In addition to the openings offered in the United States, the more extensive development of Central and South America and the Orient, now fairly under way, will cause a large demand for engineering work, particularly in the specialties above mentioned, and in these regions the American engineer, with his more direct, efficient, and less expensive methods, will undoubtedly find many opportunities.

"As to the natural qualities of character essential to the engineer, it must be borne in mind that the life he is obliged to lead is far from easy, and is often full of hardship. Except for a few, a roving life, or one subject to many changes, will be the rule. The engineer, therefore, must have a genuine love for his profession, and so be willing to sacrifice much for it, and to forego many of the luxuries of life. He should be broad and even daring in his views, yet conservative in their application. He must be possessed of executive ability and tact, so as to be able to cope with and control men of all ranks, for with such the engineer has to deal. It is not necessary that the engineer should have an aptitude for business, as such matters are usually intrusted to those especially fitted for it; but when a man combines the skill of the engineer with ability for commercial management, he may make large sums of money by applying the profession of engineering to contracting.

"Finally, we come to the question as to the preliminary education of the engineer. It cannot be said that a technical education at one of our

scientific schools is an absolute necessity, in face of the fact that many of our ablest engineers have achieved success without the advantage of that training, but such a course is undoubtedly of immense value. It is not well, however, to enter a scientific course until an age has been reached when the student is able to fully appreciate the advantages offered, and to work seriously with the earnest feeling that he is now taking preliminary steps in his life's work. It will be to his advantage, therefore, to obtain first a liberal education at a college of high standing, and then to enter one of the prominent engineering schools. Such a course usually covers four years. When the student has graduated, he must not think himself an able civil engineer; such he will become only after he has acquired experience and can effectively apply his knowledge.

"The young engineer must have a thorough understanding of algebra, geometry, and trigonometry, and a familiarity with higher mathematics as far as and including calculus. Mathematics of a more complex nature than this is rarely used by an engineer. Because the engineer is constantly employed in making computations, it is a mistake to suppose that he must necessarily be a great mathematician. There are those who claim, and with reason, that the study of this subject beyond the limits outlined above is rather a detriment, as tending to cause the mind to become engrossed in the minute details of an exact science, and thereby placing a restraint upon that broad freedom of thought necessary to grasp the natural demands, necessities, or possibilities of a location, and hampering the conception of bold plans and the fertility of resource essential to the successful accomplishment of enterprises in the face of harassing difficulties.

"The engineer must also have a complete knowledge of the mechanics of solids and fluids, both theoretical and applied, and a perfect understanding of the general laws of physics as relating to heat, light, electricity, sound, and the general properties of solids and fluids. He must be familiar with the principles of geology and chemistry, especially relating to the manufacture of the common metals, and have a knowledge of hydraulics and the general features of machinery. It is to be understood, of course, that he must be capable of the practical application of these studies in mechanical drawing, surveying, testing the strength of materials, calculating strains, etc. At the best scientific schools as much time as possible, during both vacations and terms, is devoted to practical operations in the field, such, for example, as locating an imaginary railroad, or making surveys for water-works. Such practice is of great value to the student. Both before and after becoming an engineer, he will derive much profit from a well-kept notebook, in which he jots down such facts as are constantly coming to his notice, remem-

bering that information and experience are to the engineer what capital is to the merchant.

"The American engineer is, first of all, an advance agent of civilization. Already he is building railroads in Cuba and Porto Rico, and planning tasks in the Philippines, while in China, India, and Africa he is exerting a potential influence. One or two achievements may be cited to prove his claims to leadership. Two years ago the British government invited proposals for the building of a railway viaduct across the Gotkeik gorge, a deep rift in the Shan Hills of Burmah, eighty miles east of Mandalay. When the proposals were opened it was found that the Pennsylvania Steel Company stood ready to do the work in a shorter time and for less money than any of the English builders, and it was awarded the contract. The steel for the proposed viaduct was forged and shaped in Steelton, and then shipped to Rangoon by way of New York, whence it was shipped one hundred and twenty miles inland to the intended site. With the first consignment of material, went a gang of picked workmen, with Engineer John C. Turk at their head, and a giant traveling crane capable of lifting a girder weighing twenty-five tons. The erection of the viaduct was begun on the first day of December, 1899, and with this crane, especially designed for the task in hand, the towers were put in place, the colossal steel traveler, as fast as one span was completed, being pushed along to the next, and with its overhang picking up from the ground below the parts needed for another section of the work. Floods, a faulty transport service, and a capricious climate greatly hampered operations at the outset, but American ingenuity proved superior to all obstacles, and October 16, 1900, saw the last part in place, with nearly two months to spare, and without loss of life or serious accident.

"Engineer Turk and his associates, in returning from India, passed on the way another band of American workmen bound for that country, to begin one of the most important electrical undertakings of the period. An unusual and significant story lies behind this second invasion of the East. Early in 1900, Captain de Lotbinniere, an officer of the British Royal Engineers, was sent by his government to inspect and report upon the practicability of mining the gold deposits of the Kolar district in southern India. The ore produced there is of low grade, but the cyanide process has made it valuable, and the mining experts who inspected the Kolar deposits reported that the latter could be made to yield from twenty to thirty million dollars of gold every year, although Captain de Lotbinniere's conclusion, after careful study of the attendant conditions, was that the only method of operation that held out an assurance of profit was machinery driven by compressed air. This method required that power should be found, by which compressed air could be applied to

machinery in the mine. Climatic and other reasons forbade the use of steam-power, but ninety miles away, at Mysore, were the great falls of the Cauvery River, and Captain de Lotbinniere, recalling the works at Niagara Falls, whence an electric current is carried to Buffalo, undertook the problem of generating electric power at the riverside, and transmitting it to the mines.

"The Hadras government, in which the Kolar district is located, approved the captain's plans, and gave him full authority to put them into execution. Here his real labor began. The various electrical concerns in England, to whom he first applied, declined to undertake the construction of a plant capable of operating compressed-air apparatus in gold mines, ninety miles removed from the source of power. French and Belgian engineers were equally reluctant to essay the task, and those of Germany asked for time in which to make experiments. In the end, the captain was compelled to bring his quest to this country. The engineers of the electrical company before whom he laid his proposition invited the coöperation of a well-known manufacturer of compressed-air machinery, and the result of their joint labors was a speedy and satisfactory solution of the problem of carrying and conserving energy over a distance of nearly a hundred miles. The million dollars' worth of apparatus contracted for by Captain de Lotbinniere before he sailed for home has since been put in place. Only the mines will be supplied at present by the new apparatus, the distinctive feature of which is the employment of overhead wires at a high voltage. But in the not remote future, the strength which the falls is capable of generating, during the rainy season of ten months, being enormous, important manufacturing enterprises, now preparing to locate in the neighborhood, will avail themselves of the practically unlimited power the plant will produce. The excavating machinery with which the mines will be operated also bears an American imprint, and will, together with the electrical plant, be operated by American engineers.

"The harnessing of the Cauvery Falls furnishes fresh proof of the ability of American engineers to meet and master new conditions. The pay for this work is naturally very high. Good authority has it that Henry F. Parshall, the American director of some of the great electrical enterprises now under way in London, has for some years past received annual professional fees amounting to $150,000, and the success of other of our native engineers has been hardly less marked in a monetary way. To the young man with an aptitude for the work, no calling holds out greater opportunities at the present time than engineering."

MECHANICAL ENGINEERING AS A PROFESSION

By WILLIAM M. WELCH, M.E.

THE mechanical engineer is a product of the nineteenth century. With the application of steam power to machinery his profession came into existence, and it has developed with the growth of the science and art of mechanics. Some of its branches, such, for example, as electrical and mining engineering, have become distinct professions.

Theoretical knowledge and practical ability are the essential qualifications of the mechanical engineer. His understanding of general principles is the attainment which marks the difference between him and the mechanic, and enables him to reach positions of high authority. His fellow-worker in the mechanical field, the machinist, may be, and often is, his equal or superior in natural mechanical ability, but where the machinist earns hundreds of dollars, the mechanical engineer earns thousands; where the mechanic must ordinarily be content with a very subordinate position, the mechanical engineer can hope for the very highest in the mechanical world.

The difference, so great in its consequences, between these two classes of workers is simply that of preliminary education. The mechanical engineer, taught in the schools, absorbs principles and formulas which are the essence of the toil and research of many men extending through many years. The machinist, on the other hand, knows little that he has not acquired in the hard school of personal experience. It is easy to see how vastly more economical of time and energy, and more effective, is the training of the young man with a scientific school diploma.

The monetary value of the training of a good technical school has been estimated to approximate twenty-five thousand dollars; that is, the youth who devotes four years to a technical education, spending six hundred dollars in fees and a hundred or two more for books and apparatus, is believed to have acquired ability to earn at least twenty-five thousand dollars more than if he had not taken this training. This estimate is based upon the average incomes of mechanics and mechanical engineers,

and does not take into account the greatly widened field of opportunity which this education offers to the latter.

The youth who possesses the mechanical and mathematical bent of mind, good judgment, and strong common sense essential to success in mechanical engineering, and, in addition, is able to take a course at some technical school of recognized standing, may be regarded as fortunate. He is entering a profession in which the demand for good men is considerably in advance of the supply. The use of machinery is being continually extended. In this country we are still in the infancy of mechanical development, and in numerous other great territories, such as China and the East generally, and our own new colonial possessions, the beginning has as yet hardly been made. China, for example, within the next few years will give highly compensated employment to an army of mechanical engineers. Many will also be very active in South America, Cuba, and the Philippines. But the young man need not leave the United States to find ample opportunities to prove his ability as an engineer. Every large manufacturing establishment employs several. With the forming of new enterprises, or the extending of old ones, comes more work for members of this profession.

Andrew Carnegie, writing to Henry Morton, President of the Stevens Institute of Technology, says: "We like to train our young men in accordance with our individual needs, but we almost always require them to have as a groundwork a technical education." This is the present-day attitude toward the mechanical engineer, and is entirely different from that of twenty-five years ago. Then the so-called practical man, who had begun as a boy in the shop and had reached a position of authority through his mechanical skill and executive ability, was very much inclined to scoff and sneer at the theoretical education of the young man from school, and the latter often found that it was advisable to conceal the fact that he possessed a diploma or degree, accepting a minor position with the hope that his special training would enable him to forge ahead, without the fact being known that he was a graduate of a technical school.

At the present time the young man is greatly aided in obtaining a position, by the fact of his graduation from a scientific school. It is always a decided advantage to him moreover, if his alma mater is an institution of recognized standing, because a good many of the high executive positions in the mechanical field are held by graduates of the leading schools, and among these gentlemen, there is a strong tendency to favor, in the matter of employment and promotion, young men from the schools from which they themselves graduated.

The mechanical engineer earns a living income much sooner than does the young lawyer, doctor, or member of almost any other profession. This makes the calling a particularly good one for the sons of the great

army of middle class families, whose means are sufficient to see their boys through the four years at a technical school, but are not enough to maintain them during the subsequent period, which, in the case of the young lawyer or doctor, is usually very barren of monetary returns. A young man from a technical school is usually earning enough within a year after his graduation to support himself comfortably. President Morton says that in the third or fourth year after leaving the school, the old boys generally send him wedding cards.

The technical course embraces a thorough training in mechanics, mathematics, physics, chemistry, electricity, metallurgy, mechanical drawing, and other branches which embrace theory and practice in the field of engineering. Parallel with the theoretical study, is a course of practical work in the shop. The scientific study is supplemented by a course in English sufficient to give the student a familiarity with the best literature, and to give him facility in the use of his mother tongue. French and German are taught with a view of giving the mechanical engineer direct access to the scientific literature of two peoples who are very active in scientific and mechanical pursuits.

Professor R. H. Thurston has made to the students of Lowell University some general remarks which are worth quoting. The professor says that mechanical training gives the student very effective tools, and also teaches him how to use them. The special value of this training will be tested not so much during the engineer's early years as after he reaches places of high responsibility, and is confronted with exceptional problems, difficult of solution to the best of engineers. Such problems are frequently occurring in thermodynamics and its application in the construction of engines, and in other branches of mechanical engineering. The ability to quickly and successfully solve them is a very important factor in the equipment which enables a man to attain high success in the profession.

"Seize every opportunity," says Professor Thurston, "to pick up scraps of information. Theoretical knowledge must be covered and supplemented by a wide and minute knowledge of practical details. Learn all you can from the rough-and-ready, able, but untaught, mechanic, never refusing to him in return liberal rewards from your own store of knowledge. Do not be obtrusive with your own attainments, and make every experience further your practical equipment. This alertness in gleaning practical information from practical sources is very essential to success. Many workmen can give the mechanical engineer practical ideas and make him familiar with methods and details of which he knows little or nothing. This practice, of gathering information from a great number and variety of trees of knowledge, is followed by those who obtain the greatest prizes in our profession. The man who achieves suc-

cess is the man who takes advantage of more or less obscure opportunities, overlooked by the careless and the obtuse.

"One should always be ready for the vicissitudes of fortune; be prepared to lose your position, by reason of failure of your employers or some other cause. The best way of holding a place is, of course, to do your work so well that your services cannot be dispensed with. Always be prepared to assist friends and deserving acquaintances. They may at some future time be able to do you a good turn in case of an emergency. No man, no matter how able, can be independent of others. The strongest man standing alone without friends can accomplish little. Endeavor to become thoroughly acquainted with the principles and practices of the trades which are auxiliary to mechanical engineering; be able to tell the pattern-maker how to make your model, the molder how to mold it; the founder what metals should be combined in the casting; the blacksmith where to use the best iron and where the cheapest, and how to weld, preserving the fiber of the iron uninjured. You should be able to instruct unskilled boiler-makers in the matter of selecting, testing, and spacing rivets, in welding seams, and turning the flanges. Do not be content until you can take the various pieces, as they come from their makers, and combine them into a perfect machine.

"To acquire this all-round mechanical ability takes time, perseverance, keen observation, and good memory. In addition, there must be that mechanical knack of doing things which is both natural and acquired, and which no engineer in successful practice is without. Try to earn self-approval; let no task be pronounced completed until it has been done to the best of your ability. Make the most of your resources. Even rude devices, cheap materials, rough workmanship, and absence of finish often indicate that the engineer has been able to accomplish much under adverse circumstances. Be guided but never ruled by precedents. Lowe says: 'A man who habitually prefers old practices to new, follows a principle which would stereotype every abuse.' This is even more true in engineering than in ethics, since the former is essentially a progressive art. Be, therefore, radical in theory and conservative in practice. Help the inventor, and try to become one yourself. Do not give up your studies."

THE ELECTRICAL ENGINEER

By THOMAS COMMERFORD MARTIN
Editor of "The Electrical World," and Engineer

IT IS at once admitted, by any one familiar with the development of electrical science and art, that few fields offer better opportunities in the future for young men, than electricity. The study of the nature of electricity has gone on since civilization began, but the practical industry dates only from yesterday,—not even from Franklin and Volta, but from Morse, Bell, and Edison. The first telegraph superintendent is still alive; the inventors of the electric lights are among us, hale and hearty; almost all the men, who have made the electric railway what it is, are hard at work in that or other branches. The earliest telephone patents have but just run out, and wireless telegraphy yet falters in sending messages across a few score miles of ocean. Recently, the writer mentioned to Edison that, at the new-century dinner of the American Institute of Electrical Engineers, one or two of the speakers had expressed the belief that all the great electrical inventing was completed in the nineteenth century, and that all this century would see, would be a development in quantity and degree of what had gone before. Edison regarded the mere thought as absurd, and said that, knowing what he now knows about electricity, he would like nothing better than to begin his own career at the present time. The trivial extent to which electricity has been pushed as an industry is, perhaps, realized only by those who have watched its growth for years. It is true that the active capitalization in electrical industries in the United States already reaches nearly $4,000,000,000; but, in view of what can be done, this is not a particularly impressive figure.

Large parts of this country know as little of the utilization of electricity as if they were in Central Africa. The American people send only about one telegram each, a year. Not ten per cent. of the mills and factories have electric power. Of the fifteen million families, not a million have a telephone. The vast majority of homes are without electric bells, or any of the other hundred and one contrivances which electricity offers for protecting property, communicating intelligence, economizing time, money, and labor. It may seem, at a cursory glance, that the trolley has become ubiquitous; but, although it is represented by $3,000,000,000 in capital, and some twelve hundred roads in America, it has

barely begun its work, and the investment in it grows heavily every year; while electric elevated roads and underground roads are constantly growing in number. Beyond this there lies, in the same field, telpherage, with its ability to transport mail and freight, in packages, along a thin wire or through a tube; and automobilism is usurping in modern cities the place and functions of the horse.

Of a truth, the electrical industry is "in its infancy," and the opportunities for finding in it an honorable and lucrative occupation are innumerable. If electricity never added to its present domain a single new art, it would abound in careers. The object of this article is to suggest where the openings may be found, how to get ready for them, and how to make the most of them.

The probability is that the youth who proposes to become an electrical engineer has but dim and vague ideas in regard to the subject. The glamour of some great and noble names is over him. He would invent a light, with Edison; a telephone, with Bell; welding, with Elihu Thomson; would harness Niagara, with Tesla; devise trolley cars and elevators, with Sprague; discover rays, with Roentgen; make diamonds, with Moissan; struggle with Moore for vacuum-tube lamps; or wrestle with Steinmetz over alternating-current problems. Should he feel the movings of financial or executive ability, he may want to handle great electrical manufacturing enterprises with Coffin, Barton, or Westinghouse; to put through huge street railway consolidations with the Whitneys and Everetts, or a lighting "deal" with Morgan or Brady; to organize a great submarine cable system with Mackay or Pender; to direct vast telegraph and telephone systems with Eckert, Chandler, or Hudson. He notes the names of these and other men, as he reads the newspapers or talks with electrical friends, and feels, as doubtless many do who scan these words, that he could do as they have done, if given the opportunity and the training.

There will not, however, be any attempt made here to discuss exhaustively the commercial side of electricity, it being safe to assume that the qualities that insure financial success in one field of business are pretty much the same as those which govern in the others. President Vreeland, of the Metropolitan Street Railway, for example, began his career on the Long Island Railroad. One of the most successful electric light station managers was an insurance man. The head of the biggest telephone system was a lawyer. The Niagara power enterprise was inaugurated by a banker, and a brilliant young legal associate. The pioneer transmission system, in the Far West mining regions, was fostered by a schoolmaster, and the head of the largest electrical publishing house in America was also a teacher. The chief electrical manufacturer in the United States was once proprietor of a Lynn shoe factory. The

novelty of the electrical art and the necessity of creating new productive resources, with new methods of marketing the goods, or of reaching out for export trade, as well as of organizing sub-companies in thousands of communities, have invited bold and skilful spirits.

To young men ambitious to reach the high places in the electrical profession,— the advice is earnestly given to be satisfied with nothing short of a technical education. In the earlier electrical days, this was not requisite, but it is now very necessary. The electrical army as a whole presents the curious spectacle of being led by self-made men, whose immediate staff and subordinates are nearly all graduates of prominent technical schools.

When the great outburst of electrical activity came, some twenty-five years ago, telegraphy was the only existing art that taught men anything about circuits, with the result that a great many operators, who were daring or ambitious, were presented with opportunities, that can only be compared with those in placer gold mining preceding the harder work of quartz crushing. Edison himself, once a train newsboy, did much to create fine careers for old associates at the key, many of whom are now wealthy and prominent men. So it was in the telephone field. One operator sold his Bell telephone rights in a leading city for less than $1,000. That city's exchange at present represents a capital of millions. But others, elsewhere, held on and now stand at the head of the art.

Nowadays, very few men are drawn from the telegraph field to fill responsible positions in electrical work, while telegraphy itself, as a career, has sadly shriveled up. It has some good prizes, of course, and they are usually taken by operators who began as messenger boys; but, for the great majority of the thirty or forty thousand men working at the key, the salary limit is only a few hundred dollars a year. Most of the work is mechanical routine of a rather wearing character; and women are rivals, too, getting the lighter tasks. Besides, there is always the likelihood of a development of mechanical, high speed telegraphy, which might create a few more executive positions, but would depress average wages, now none too good. It cannot be said that telegraph men view their position very hopefully, but there are two branches that have a brightening prospect. A great many cities have their fire and police telegraphs, and it is the tendency to magnify the office of superintendent by giving its incumbent care of all local wiring, and sometimes the control of a municipal lighting plant. So, too, on several of the steam railroads, the telegraph superintendent finds himself called upon to look after many things not dreamed of in his younger philosophy, and with increased responsibility comes higher pay. It is a fact, nevertheless, that this new work often taxes severely the ability of an official brought up on a meager scheme of Morse keys and crowfoot battery,

and the next generation of these men will all be much more highly educated and trained than are the worthy veterans of to-day.

Telephony is somewhat akin to telegraphy in offering restricted careers, yet it is still so under-developed that one hesitates to deprecate its opportunities. In both fields, valuable inventions will be made; it was but yesterday that Professor Pupin received a few hundred thousand dollars for his improvements in the carrying capacity of telephone circuits. For engineering work, however, there does not appear to be a large opening, although the telephone companies are far more liberal and enterprising in this respect than their predecessors of the telegraph have been. A large proportion of the work in any telephone exchange is done by women, as "hello girls" and monitors, while some exchanges are entirely conducted by women. Unless the exchange is a large one, there is no need of an electrical engineer, and the manager, with a little fundamental instruction and average intelligence, can keep things going.

In telephony, as in telegraphy, the future is with the educated man; it is very hard to find today, among those who have made telephone engineering a specialty, any one who is not a college graduate. It is obvious that, as the exchanges grow, the manager who is technically expert will often be in a very advantageous position. It is also obvious that telephone exchanges must inevitably form groups, and that these will centralize their engineering, thus minimizing the managerial responsibility and salary and leaving fewer well-paid employees. This has happened to some extent in the Bell system, and there are signs of it in what is known as the "independent" field. With some five thousand or six thousand telephone exchanges in the country, it will be readily understood that managerial salaries may range from small stipends to $10,000 a year; there are many engineering positions worth from $1,500 to $5,000. For the telephone rank and file, as with the telegraph, the situation is nearly hopeless. No earnest, ambitious man will be content to remain in it permanently. He can, however, use it as a stepping stone. The truth was summed up by J. P. Abernethy when he said, in his well-known book on commercial and railway telegraphy: "Telegraphing is the road to many excellent situations in railroad, express, and business circles." Andrew Carnegie long ago proved that statement to be sound.

Transferring the survey to the electric light and power industry, where current is generated by modern methods in huge quantities, and sold for an endless variety of uses from the street circuits, the two largest fields for electrical employment present themselves to notice. While telegraphy and telephony, kindred arts, represent perhaps $750,000,000, electric lighting and electric railways, kindred arts again, rep-

resent over $3,000,000,000, and their rate of growth is extremely rapid. It is in central station work that the best opportunities are offered in electric lighting, there being over 3,000 central plants. While the number of isolated plants is probably three or four times as many, they are not large, as a general rule, and are put in charge of licensed steam engineers. Such positions do not rise very high, usually, in either dignity or emolument. But central station operation involves clever engineering; and, while many men now engaged in it have grown up self-taught, the technically trained man is the demand of the hour, and no other has much chance.

This is true of the management as well as of the engineering. One of the finest systems in this country, at Chicago, is ably conducted, at a munificent salary, by Samuel Insull, once stenographic private secretary to Thomas A. Edison. Another, in New York State, is carried on by a former Standard Oil broker, with equal efficiency; but both of these able men, as the problems before them enlarge, summon to their aid the best technical advice and support the country can afford. In such managerial and engineering work the pay is excellent, ranging anywhere from $1,200 up to $20,000 a year. In many cases, besides the salary, the manager or engineer has a direct interest in the plant, is given some of its stock as an incentive, or is allowed to subscribe for shares; and the instances are numerous of faithful, intelligent service thus being abundantly rewarded. This, of course, is more particularly true of the smaller stations, where responsibility is strictly personal. Such opportunities are constantly arising. In the larger cities, the work of consolidation that goes on everywhere has blotted out a great many independent competitive companies; but, on the whole, the cheapening of current and the extension of circuits has widened the area of employment and kept up the number and pay in managerial and technical positions. Young men are constantly called for to fill positions at small pay but with excellent openings ahead. The brighter and more studious of these make inventions or improvements, from time to time, that are sold for thousands of dollars.

Outside of the leading companies, there have grown up a great many consulting or contracting firms of engineers who find much to do in every city in planning and equipping plants for new buildings, etc. At the present time there is enormous extension of electric power to mills and factories, for which good electrical engineers are needed, either in constant attendance or for occasional supervision. Such work yields fair professional incomes, say from $2,500 a year up, to a great number of competent men.

In general, while the engineering of street railways has not been so complicated as that of central lighting systems, the magnitude of those

enterprises has made the field fully as promising and profitable to the electrical engineer. The management of many of these properties is still in the hands of those who started with horse railways and are untrained technically in the modern sense, but the staffs throughout consist largely of educated young men.

There are, in reality, only two ways of getting the education which will enable a young man to hold his own in the modern electrical world. One is the preferable way of taking a technical college course. The other is that of following the course of study provided by those useful institutions, the correspondence schools. To get into an electrical factory immediately after leaving an ordinary public or private school is a great mistake, although it is a good thing to supplement a college course with a year or two of factory work. Of course, there will always be geniuses who push to the front, like Van Depoele, the American trolley pioneer, who began life carving wooden images and reredoses in Belgium; or his compeer, J. C. Henry, who began at the telegraph key. But it is a question of training now for life-work, and in this respect too much insistence cannot be laid upon the thorough mental efficiency requisite. For those who cannot go to college, and are willing to study in their hours of release from daily duties, the lessons of some of the correspondence schools can be recommended. This plan may accompany work in an electrical factory, but the latter will be of little avail without it. Large manufacturing firms like the General Electric and Westinghouse Companies have students at their works, but they are all young men of education desiring to round out their theoretical knowledge by an acquaintance with practical design and construction.

In regard to what the college training in electrical engineering consists of, the four years' course at a certain prominent university may be cited as an example. Graduation after the complete course leads to the degree of E. E.— electrical engineer. The first year includes trigonometry, algebra, analytical geometry, physics, chemistry, qualitative analysis, descriptive geometry and drawing, and shop work. The second year includes the calculus, physics, physical laboratory work, industrial chemistry, quantitative analysis, properties of materials, elements of electrical engineering, engineering of power plants, graphics and drawing, and shop work. The third year includes analytical mechanics, resistance of materials, properties of materials, testing of materials, practice in the mechanical engineering laboratory, the steam-engine and its accessories, dynamo and motor practice, telegraph and telephone, direct-current laboratory work, electric lighting, dynamo and motor design, and the theory of dynamos and motors. The fourth year includes thermodynamics, heat and its applications, motor, dynamics of motors, machinery and mechanism, metallurgy, electro-chemistry, work in electrical engineer-

ing laboratories, electric power, the theory of alternator and transformer, electric railway, management of electrical plants, electrical distribution, theory of variable currents, advanced theory of electricity, theses, and original investigation or design.

This is a pretty complete bill of mental fare, and should yield good electrical engineers. Some men, who never ought to have taken up the study, drop out; some stay in, but are "duffers" to the end. Others feel the need of further study,—as, for instance, in the coming art of electrochemistry,—and go to Germany for it; or else go to France and study higher physics. Many young men now well known in electrical engineering have put themselves through college in a manner that commands admiration. Dr. Pupin, of old Slavic descent, now adjunct professor of mechanics at Columbia University, had little cash when he landed in America; but, even as a rubber-down in a Turkish bath, he devoted much attention to mathematical studies and inventions for which he is now so well known. The chief engineer of one of the largest electrical companies worked through college while a night telegraph operator in New York City. He is still a young man, but is on the council of the American Institute of Electrical Engineers, and has served two terms as president of the New York Electrical Society, the oldest body of the kind in America. Another electrical graduate, of Southern plantation stock, began his studies at Johns Hopkins University, but had to drop them. He became a motor inspector in New York, and then was appointed superintendent of a small suburban lighting plant, studying all the time. He was soon selected for the electrical professorship at a Western state university, and to-day is filling the same chair at the most important university in the Dominion of Canada. There is ambition displayed in these instances, and in many others which might be quoted, but assuredly there is also an underlying love of study and a courage that no obstacle can daunt.

THE MINING ENGINEER

By WM. S. JONES
Mining Expert

A COMPLETE revolution has been wrought in mining methods during the last few years, and at the present time the young man who would succeed in this calling must be a thoroughly trained mining engineer. If he has a technical education and a natural aptitude for the work, no occupation holds out larger promise of profit and steady

advancement. The pay is large and the field practically unlimited. A striking instance of the handsome rewards awaiting those equal to their opportunities is furnished in the career of John Hays Hammond, who, it is reported on competent authority, received $60,000 a year for his services. The statement is frequently made by men interested in mines and mining that there are not enough competent mine managers to supply the demand.

It would not be too much to say that a managership awaits every graduate of a mining school, who proves by active and intelligent labor in the fields and underground that he understands mining practice as well as theory. The graduate, when he first goes to a mine, is likely to be regarded as something of a hothouse growth; he must bring his intellect to bear upon the practical problems of the day's task, to equip himself for the position. His technical knowledge of formations must enable him to make explorations underground as well as on the surface. If he is to be in control, he must be able to do a given piece of work as well or better than the best of his workmen. This implies strength as well as skill. He must also be equal to the task of managing men.

When these qualities are combined, their possessor has not far to seek for an opportunity to exercise his abilities in a remunerative field. There are few professions that offer such promise of high reward as does that of the mining engineer. One reason why high salaries are paid to mine managers is that, their work being so far away from headquarters, it is necessary that the proprietors shall secure men upon whom they can absolutely rely, not only in the matter of fidelity to their interests, but also for ability to conduct the enterprise without supervision. Not all successful mining engineers are graduates of the schools. A considerable number of those who are in the lead are practically self-taught. Senator John P. Jones of Nevada belongs to this class. In the early days of the gold excitement, he went overland with a wagon train to California. There he worked as a miner, in placers and tunnels. The first hundred dollars he ever possessed was dug from the earth with his own hands. He diligently studied mining, reading and rereading many books upon the subject. He prospected from place to place until 1867, when, quartz or lode mining having largely superseded placers, a prominent mine owner in the Comstock asked him to take charge as superintendent of the Crown Point and Kentuck mines. The future senator soon secured a proprietary interest in the Crown Point, and from its development acquired a fortune of millions. He lost his fortune by investments in various mining enterprises in California and Nevada, and for several years was a poor man. Then he was suddenly restored to wealth by the great productions of the Treadwell mine in Alaska, which he had located and developed. Senator Jones ascribes the success, which has

attended his efforts, to an early determination to make himself master of every branch of his calling, and it is his belief that any young man of the present time, who takes up mining with a like determination, is sure in the end to acquire a competence, if not a fortune.

The late Marcus Daly was another admirable example of the self-taught mining engineer. He was born in Ireland, and in the early 'fifties drifted to the Pacific coast. He had no sooner set his foot in California than he bought a miner's kit, and struck out for the mines. He did not know a gold vein from a ledge of sandstone, but he had a pair of strong arms, and he knew how to use a pick and shovel.

In the course of a few years, he gained the reputation of being one of the best judges of mining properties in California and Utah. He also made valuable acquaintances, among them the Walker Brothers, of Salt Lake City. It was in their behalf that he undertook the exploration of the Alice mine, in Montana. Going to Butte as a working miner, he went to a cheap hotel, stayed a week, and then told the landlord he could not pay his bill unless he got a job. The landlord secured work for him in two or three mines, one of which he found too damp for his health, and another unsafe. The landlord, in desperation, finally induced the owners of the Alice to give Daly a chance to earn money enough to settle the account. Daly studied the property for three weeks, while he worked, then left town, and, six weeks later, returned as superintendent of the mine, which was soon turning out bullion to the amount of nearly one million dollars a year. All this time he had been working for others, but he was now in a position to do something in a modest way for himself. Among other investments, he was able to buy the Anaconda silver mine, for thirty thousand dollars. After working it for silver to a depth of 120 feet, he struck the richest copper deposit in the world, and his fortune was made. Besides the Anaconda, he soon owned the St. Lawrence and adjoining mines. Work was pushed forward on both the Anaconda and Lawrence, and as copper was then beginning to find a livelier market than ever before, he constructed works for the treatment of ores, of a magnitude that had not been before seen on the American continent. A city was laid out at the same time and named Anaconda. Daly had in his employ in mines and reduction works, over which he held control at the time of his death, about six thousand men.

Pluck, crowned by good judgment, has been the corner-stone of most of the great mining fortunes, including that of the man from whom the Colorado town of Creede takes its name. Nicholas C. Creede was born on an Indiana farm, put in seven years as a scout and Indian fighter, and helped with his hands to open the overland route to the Rockies.

"I was in the Black Hills," said he, "before gold was discovered, and, when I heard of that excitement, it set me to thinking about my lost

opportunities. I began to talk to everybody I met whom I thought had any knowledge of minerals, and by this means picked up sufficient knowledge to tell silver or gold 'float' when I saw it. Then I became a prospector. I usually took a man along, though sometimes I could get no one to accompany me, and went for months without seeing a human being. In May, 1899, I struck some float on the side of Mammoth Mountain. I tied my burros and began to follow it. I climbed the mountain all day along the trail of the float. The sun was beating down on me, and the glint of the float under my feet was blinding. Just when the Western sky was tinged with that gorgeous red we sometimes see in the Rockies, I lifted my head and saw projecting in the front a boulder of silicate as big as a house. That was where the float I had followed all day came from. I almost shouted with delight. I knew it was bound to come some day, but the idea of finding it in such shape was appalling to me. However, to make a long story short, I staked it off and it was mine. I named it the Mammoth. I knew there must be more of it close around, and I kept at work for a month, until in June, I found the Ethel." Six months after he located the Mammoth and Ethel mines there were five thousand people in Creede.

A somewhat similar story lies behind the career of Thos. F. Walsh, owner of one of the richest mines ever found in Colorado. Walsh was born in Ireland fifty years ago, and came to America in the early 'seventies, settling in Colorado. He was a millwright by trade, but soon took to prospecting, and made a small fortune during the Black Hills excitement. Then he moved to Leadville, and, while conducting a hotel, devoted most of his time to mining. Like Marcus Daly, he gave the study of ores and minerals careful attention, and became thoroughly versed in the nature of mineralized rock. He made money in Leadville, as he had in the Black Hills, and later extended his operations to most of the mining counties in Colorado, besides operating mines in Montana. Up to 1890, Mr. Walsh always had partners in his ventures, but, from the first, he hoped to find a mining property that he could own alone. Five years ago, he was examining the country west of Ouray, Colorado. The section was a difficult and uninviting one for the prospector, slide-rock and moraine making it almost impossible to get a glimpse of the original formation. There was, however, one place on the mountainside where some previous work had been done, reaching in to where the vein ought to be, but unfortunately an immense bank of snow guarded the entrance and covered the workings at this point. He continued his investigations for several weeks, and one day found a small piece of ore. He assayed it and it ran very high in gold. Then he waited for the snow-bank to melt. The time came at last when the tunnel he was waiting for could be located, and, with a little shoveling, exposed. Next day, he

arose from a sick-bed, and, though scarcely able to walk, made his way to the tunnel and began an examination of the vein. He found one side of it lined with sparkling zinc and copper ore, beautiful to the eye but of little value. On the inner side, however, he noticed a white rock, dotted with little specks of a black mineral which his trained eye told him at once was silvenite, a composition containing two-thirds gold and one-third silver. Careful assays quickly justified his first judgment. The claim, which was on abandoned ground, was located, patented, and named Camp Bird. After that, Mr. Walsh set to work to secure by location and purchase an absolute and individual ownership of this vein for six miles in length. So successful were his efforts, that he now has what promises to be by far the largest and most extensive gold and silver mining property owned by any one individual in the world. The cost of acquiring and equipping this property up to the present time has been enormous. Fortunately, the output has been even greater, and it is predicted that in the course of a few years it will run into a plurality of millions a year. The lesson to be drawn from Mr. Walsh's career, by young men who have any idea of embarking in mining business, is to study the nature of rocks in a most thorough and practical way, and not to despise those which are humble in appearance.

Edward Schiefflin, discoverer of the silver ledges at Tombstone, Arizona, was pronounced by General Miles to be the truest type of the untiring and persevering prospector the Southwest has ever had. He was born in Pennsylvania, and when a lad was taken to Oregon by his parents. His father tried to teach him farming, but the boy ran away and went prospecting for copper ore in southern Oregon. He endured hardship and solitude, sometimes with a companion and sometimes with only a jackass for company. He dressed as an Indian. For years he prospected. No matter how footsore, hungry, lonesome, and weary, he was never known to waver in his love for his chosen vocation. The year 1877 found him delving in the hills near the present town of Tombstone. Early in the following year he found a peculiar specimen of rock which he was convinced was rich in silver. He returned to Camp Hauchuca. There he told a brother of his discovery, and the rock was submitted to a miner named Richard Gird, who suggested that it might pay to work the ground from which it was taken. To this Schiefflin consented, on condition that Gird accompany them and pay the expenses of the outfit. It was thus arranged.

Ore was found that assayed over two thousand dollars to the ton, and 160 acres of mineral land were located. When they had taken out $10,000 in silver bullion, they invested the entire sum in improved machinery for the reduction of silver ore. This machinery enabled them to take out every week from four to six thousand dollars' worth of silver.

At the end of three years, Gird disposed of his interest in the claims for eight hundred thousand dollars, and the Schiefflins for five hundred thousand dollars each, but an equal division was made, Gird refusing to take more than an equal third. In five years the Tombstone district produced twenty-five million dollars worth of silver.

It must be admitted, however, that a great many more failures than successes are to be recorded in the life of the mining prospector. The work of the mining engineer is not subjected to the same vicissitudes as that of his employers, for he is only occasionally a party to disappointments and losses.

In the great and growing field of coal mining, the engineer is confronted by conditions essentially different from those of the searcher after precious metals. Here he is on comparatively safe ground, with just as important problems to solve, but with far more conservative materials to deal with and under better organized industrial conditions. Supply and demand govern the business. Economy of production is the one great end and aim of his efforts. The factors entering into the engineer's calculations are fixed. The coal is there. It is to be got out more promptly and at less cost than before, and if the expert can do this, he has succeeded. If he can overcome the natural enemies of the coal miner — flood, fire, and noxious gases — by simple contrivances in the nature of preventives, he has scored other triumphs not inferior to those of the cautious lawyer who saves his client's money by preventing litigation. If he can cut cross-tunnels safely in places where his predecessors feared to go; if he can purify the air by cheap ventilating appliances; if he lets no pound of steam pressure go to waste, but utilizes it all in improving the service; in short, if he works for a company dividend rather than for his salary, his reward will be substantial.

With ingenuity, a clever student of mining engineering can accomplish more than can his fellow-engineer with capital. Originality is everywhere at a premium, but in a coal mine an idea is sometimes worth a fortune. The soft coal fields of the South are waiting for exploration, for young men who have the sharpness to get their stores out, and into the consumer's hands, at a profit. Some of these fields are enormous. West Virginia has more coal lands, for instance, than Great Britain. Even Kentucky can claim the same distinction, while Alabama and Arkansas have each eighty per cent. of the English area of 11,900 square miles. Most of these vast deposits lie within a few dozen miles of great bodies of iron ore and an abundance of sulphur. There is enough iron and coal in America to supply the wants of the world for the next ten thousand years.

It may very easily be true, therefore, as claimed by the heads of technical schools and colleges (such as Cornell and Stevens), that the demand

for civil engineers in the mining and collateral industries is far ahead of the supply. Every class graduated at these leading institutions in late years has been absorbed by employers, its members being readily given desirable and remunerative positions. American corporations are not only using them here, but are sending them out to our "dominions beyond the seas."

THE STATIONARY ENGINEER

FROM the time when James Watt listened to the music of the steam from his mother's teakettle, the vocation of the stationary engineer has had a peculiar fascination for the lover of mechanics. When this attraction manifests itself in a boy, there can be little doubt of the mechanical bent which it implies.

The stationary engineer has been an honored figure in the world's work for a hundred years and more. His work has made it possible for industry to accomplish wonders; for architecture to rear magnificent edifices along with the development of the elevator; for electricity to girdiron a vast area of the United States and thus increase the comfort and convenience of the people.

The calling is one which gives its best prizes to proficiency, and stamps the work of all as useful, and, therefore, honorable and helpful to mankind. Beginning with the humble wages of an oiler, cleaner, or fireman in an engine room, a young man of natural aptitude need encounter no insurmountable obstacles, if he be determined to reach the high plane of consulting engineer. His wages may be as low as three dollars a week, yet he has opportunity to study the mechanism of the operating machinery, and to get that practical knowledge which is just as essential to him as the theoretical study which he may pursue in special schools.

Organization has done much to promote the interests of stationary engineers. In the United States, fifteen thousand of them are now enrolled as members of the National Association of Stationary Engineers, with hundreds of local associations throughout the country. This body has struck the keynote of its purpose in the single sentence: "To earn more, learn more." The educational committee, whose members are recruited from the ranks of the active engineers, conducts a regular course of instruction through the columns of the Association paper, propounding questions to be answered, and printing interesting discussions arising from the difficult problems in engineering. The advantage of this attitude on the part of the leaders is apparent in the better

technical training of the engineers belonging to the association. They have been commanding better wages, within the past five years, than ever before.

Another factor which has entered into the work of the stationary engineer is the dynamo, or the electric generator, which is directly connected with the steam engine. It was Thomas A. Edison who, in 1883, first united these two powerful forces in a single harness. As a result, the stationary engineer of to-day is not considered competent if he fails to understand something of the principles and mechanism of electricity, as well as those of steam.

The broadening of his horizon has been a good thing for him. He easily and rapidly graduates, if he be ambitious and intelligent, from the hard toil of the engine room to the dignity of the position of chief engineer. There are stationary engineers receiving salaries of three thousand, four thousand, and even five thousand dollars a year, who owe their success solely to their ability to take advantage of opportunities for self-improvement. The constructing or consulting engineer is sometimes evolved from the engine room, and he is the better for that training when he comes to lay out a power plant for a railway, or a heating and lighting plant for a large institution or public building.

GREAT PROBLEMS OF INVENTION

By PARK BENJAMIN

IT WOULD be a difficult matter for any one to define what a great problem of invention really is. I suppose it would mean a question the solution of which would result in some great and lasting benefit to the human race. But that definition presupposes that we can measure and compare benefits hereafter to be gained, which is manifestly impossible. We can tell what inventions have been of great utility to the world; but who can assign relative values to those yet to be made, seeing that they are infinite in number, and that, in the progress of the race, new ones arise daily, almost hourly?

Even if we regard each patent granted by the United States as requiring the solution of but one problem, then, in this country, we are solving six hundred original problems per week, and have solved nearly seven hundred thousand of them in the past. On these recorded solutions, nine-tenths of the industries of this country

are now based. Naturally, there must have been many solutions of great problems among them to warrant this enormous investment of capital. But, if any one attempted to designate the particular patents which contained such solutions, he would have an impossible task. Often they are discovered only after a long litigation. It was merely an extra twist of a barb which covered our continent with its present cobweb of wire fencing. Who could have perceived the invention of the speaking telephone, in a patent in which there is not a single word to the effect that the apparatus there described is capable of transmitting articulate speech?

It is seldom that any one ever deliberately undertakes to solve a "great" problem. That the reverse is the case is the popular notion, which always imagines the typical inventor as a child of genius, with his eye intently fixed on nothing but "world forces," which, by some mystic power, he is about to harness for the use of man. It pictures him as disturbing the electrical charge of the entire earth, and thereby influencing the heavenly bodies in the outermost verge of space. The practicability of his communication with the nearest planets is accepted with swift credulity. That he can evolve new sources of energy literally from nothing, seems entirely thinkable; and, no matter how extravagant the claims which he may make, or which interested parties more often make for him, there are always people ready to accept them as true, and to back their faith by substantial subscriptions of cash.

As a matter of fact, the real inventor almost always concerns himself with little advances. Frequently, he has no conception of what he has invented; and yet, contrary to public impression, he seldom gets his results by accident. He knows that he cannot make an invention by mathematical processes and the juggling of X from one side of a formula to another,— for that is the road which leads nowhere,— and equally well he knows that, if he goes star-gazing, and pays no attention to his path, he is likely to land only in the ditch. So, in the end, he learns to take short steps; and, if he be wise, the only hope which he will permit himself is that some day some one of these will prove to be the last one necessary to reach the goal. Thus it comes about that successful invention is not the result of a constant reaching after the present unattainable, which always stands postulated as a great and alluring problem; but it is, in reality, the making of short advances, one after another, perhaps through many generations, until, at last, just as the coral reef is built up cell by cell from the bottom of the ocean, until it finally appears above the surface, an invention is perfected by small and gradual accretions, and the work of the particular man who brings it to light is only the last addition,— the apex which crowns the heaped-together labors of numbers of men, without which his own would have no support.

Why these steps, great or little, are ever taken, is in itself an unsolved problem. Whether a man of unusual inventive genius is a product or a factor of the circumstances about him, is always debatable. We may believe, with Emerson, that souls are born out of time,— extraordinary, prophetic,— who are rather related to the system of the world than to their particular age or locality; or, contrariwise, with Froude, that even the highest genius is never more than the highest degree of excellence which forms the environment. Is invention inspiration, or merely the reflex excitement of a brain impressionable to certain surrounding influences? The patent laws of this country are ultimately based on the first conception; yet, as a matter of fact, nearly all inventive acts are probably due to what is no more than the mental resonance of preëxisting and environing ideas,— the novelty lying, so to speak, in the composite tone or chord emitted and not in the fundamental note.

The length of time which an invention takes to fructify or develop has but an obscure relation to the general problem. Some ideas remain, after their first appearance, inchoate for ages; others, evolved in the meantime, rapidly grow to perfection. The problem of aerial flight, the study of which began centuries ago, is still unsolved. So is the economical utilization of the tides, and the direct employment of the sun's heat to generate power cheaply, which are riddles almost as old as the race. The steam turbine, now coming into practical use, was first described nearly three hundred years ago; the electric light waited almost two centuries for general utilization; and the electric railway, over eighty years. On the other hand, the electric telegraph was in successful operation within fifty years after it was first suggested, and the telephone in less than a decade became a necessity of life.

Nor is it merely the broad and general conception which alone lies idle and unimproved. Ideas which, it would seem, should be at once turned to practical account, suffer the same paralysis.

Light produced by an electric discharge in a vacuum globe was discovered by Hauksbee in 1709. It is only within the last ten years that attempts have been made to adapt this mode of illumination to practical purposes. The latest form of electric lamp which, many believe, will replace the familiar carbon filament bulb, is simply an exposed rod of porcelain, magnesium, or other insulating material that is a nonconductor when cold, but which, when sufficiently heated, allows the current to pass and then bursts into glow. It requires no vacuum around it, and it is believed to be far more economical than the filament lamp. It was invented by Jabloehkoff in 1876, when everybody was trying to adapt the blinding electric arc to the uses of general illumination. It was one of the first notions of the employment of a glowing mass in place of the dazzling flame. But then the filament came along, and all the

world forgot Jablochkoff's luminous porcelain, until about four years ago, when a German professor reinvented it; and now, by an odd irony of fate and the connivance of its promoters, it is known by his name and not by that of the man who really made the discovery.

The history of the automobile is even more striking, as affording an instance of long delay. Instead of being a new departure in locomotion, its practical, every-day employment antedates steam railways. Oliver Evans, of Philadelphia,— the universal genius of his day,— had one in 1786 which was actuated by steam to run on wheels on the land, and to be propelled by paddles in the water. Subsequently, he removed the paddles and devoted himself to the promotion of the land vehicle. Because of this, the Pennsylvania legislature solemnly said he was insane, and the lawgivers of Maryland gave him a patent on the wagon, only upon the argument that "the grant could injure no one." Trevithick, in England, had a steam automobile in 1804, but gave it up because of the badness of the roads. Then the idea slumbered, the inventors mainly turning to railways,— until Gurney, in 1825, devised a steam carriage which, six years later, became a regular public conveyance on the ordinary turnpike roads between Gloucester and Cheltenham.

The carriages ran four times a day for four months, and carried nearly three thousand people over an aggregate distance of four thousand miles; making the individual trip of nine miles in about fifty-five minutes. They were driven out of existence by the populace. Country gentlemen, trustees of roads, farmers, coach proprietors, coachmen, and even the post-boys united against them. Some said they would be injurious to agriculture, others that they would injure the roads, others that the non-use of horses would destroy the market for oats and this would ruin the farmers, and the coach owners, loudest of all, bewailed the competition with their business. In vain it was pointed out that such quick transportation would immensely benefit the community, that eight people could live off the land required to support one horse, that only half the fare demanded by the regular coaches was charged, and that the roads would be less hurt by the broad-wheel rims of the automobiles than by the narrow tires of the coaches. Stones were heaped up in the roads so that the vehicles were wrecked, and the final quietus was given in the form of turnpike bills enacted by parliament, to impose prohibitory tolls on what an honorable member called the "steamboats on wheels."

Then came Stephenson and his railroad, the latter growing into the great network of tracks which now covers the globe. Meanwhile, for sixty years, the horseless vehicle lay practically dormant. When it was revived, the same old questions about it which agitated the grandfathers of the present generation came up again. Will it climb a hill? Can it be made smokeless? How is water to be carried?— and so on.

Of course, the invention of the storage battery has rendered electric propulsion possible, though at the heavy cost of devoting half the available power to the moving of the weight of the battery itself. The gas engine, burning vaporized petroleum, has replaced the engine of seventy years ago, driven by compressed gas. But the steam automobile of to-day, in some respects, is not as far advanced in its construction as was the old steam carriage. There is not an automobile yet in existence which is not fairly clamoring for new inventions to bring it to the proper status of a cheap, safe, and comfortable conveyance.

On the other hand, the bicycle, propelled by foot treadles, begun as late as 1864, created a little *furore* in the form of the old "bone-breaker" of 1870,— and, after developing into the lofty huge wheeled "ordinary" of the 'eighties, seemed to have reached its culmination. But then came the reinvention of the pneumatic tire, and the introduction of ball bearings. The tire was old and had appeared in England in 1847, when it was made of canvas and leather. The rubber industry had grown meanwhile, and solid rubber tires had already been placed on the wheel rims of velocipedes. These changed into arched or cushion tires, and then the inventors went back to the pneumatic or air-filled tire, and proceeded to devise ways of fastening it on the rims. Coincidently, the form of the machine shrank to the low "safety," and speed was obtained by gearing instead of by directly applied cranks. In ten years, the whole apparatus changed from a toy to a vehicle for everyday use, brought to such a stage of perfection that, at the present time, it would be difficult even to suggest the future trend of improvement in it.

Frequently, however, a great problem is conquered by the happy adaptation of an idea, already known, to a new purpose. For example, in 1885, Marcel Deprez conceived the notion that a rotating magnetic field might be produced by the combination at right angles of two alternating electric currents, which differed from one another by a quarter period in phase. Three years later, Tesla saw the possibility of producing a rotary field in an electric motor in this way, and demonstrated it, and for the first time constructed the apparatus, which subsequently rendered practicable the harnessing of Niagara.

As has been said, it is exceedingly seldom that any great problem is solved by accident. I can recall no striking modern instance of this except that of the telephone, which Alexander Graham Bell says "opened in his hand," and was in fact due to the chance observation of a wholly unexpected effect in apparatus not devised for the purpose. Mr. Edison certainly has courted chance, and years ago equipped a laboratory with "every known substance" (as his critics averred), with the intention of trying what everything would do when mixed with everything else; but his productions of late years show no indications of the fortui-

tous, and, in fact, are rather typical than otherwise of the "little step" beyond the accomplishments of others. If there be any specially recognizable modern tendency, it is not to depend at all upon opportunity, and even to attack a problem through a comparison of abstract possibilities and processes of mathematical elimination of factors. Professor Pupin's recent discoveries in telegraphic and telephonic transmission were not merely the results of inventive conception, but of the merciless tracking of it by mathematical tests continued over many years,—a course which it would have been impossible to follow had he been a less profound mathematician than he is. The net result is the possible substitution of steel for copper wire on long telephonic circuits, at an immense saving in cost, a great increase in the distance over which telephonic communication can be economically sold, and a lively expectation that the problem of talking across the ocean is no longer insuperable.

There would be little difficulty in multiplying instances to show either that the times are often ahead of the man, or the man ahead of the times, —either that the idea exists and no one is impressionable, or that some one has formed the impression and there is no environment suited to receive it. But, in the end, debate the question as we may, every successful invention ciphers down to a product of man and times, both coacting as necessary factors.

While the discernment of a great problem is in itself a certain advance toward its solution,—and the clearer the discernment, the longer is that step,—still the actual crossing of the gulf alone can result in achievement. Finger posts are useful to point the way, but they get nowhere. Conceptions of how one would like to overcome the barrier, or how one thinks it could be done, or ought to be done, are often mistaken for doing so; though not so frequently nowadays as fifty—nay, twenty-five—years ago, for people have learned to their cost that claims do not necessarily imply accomplishment, and there is no title more easily gained by a little humbug than that of a "modern wizard."

The problems of invention are almost infinite in number, and impossible of comparison;—and yet it is not difficult to single out the one which is greatest of them all. That is the chemical combination of carbon with the oxygen of the air, without the production of heat, and, as a consequence, with the production of electricity. When this is accomplished, we shall obtain our power, not with a loss of ninety per cent of the energy stored in the fuel,—which is the condition of the steam-engine and boiler burning coal,—but with perhaps less than ten per cent loss. That means not only the end of the reign of steam, but power so cheap and universal that no mind can fathom the capabilities of the race after the accomplishment shall have been made.

As to what are the problems next in order of importance, few will agree; but probably they are, first, the economical isolation of the nitrogen of the air, which will permit the production of artificial fertilizers, at a cost which will force Mother Earth to bring forth her increase at a rate now scarcely thinkable; and, secondly, the direct utilization of solar heat to make the sun pump water to irrigate the deserts and dry places of the earth and fit them for human habitation.

But, meanwhile, there are many minor problems — minor only in their relative sense to those vast ones — urgently pressing for solution, — and some are very close to it. We want to know how the glowworm makes light without heat, — and how to do it ourselves; — how to make the high potential alternating current drive all the locomotives; how to construct an unsinkable ship; how to telegraph by the etheric waves without possibility of interference by disturbances in the same medium; how to extract solids from liquids economically by centrifugal force only [Since the above was written the Gathman water purifier has been invented. — EDITOR.] and not by filtration; how to adapt the steam turbine as a motor to every-day uses in place of the reciprocating engine; how to build a cotton-picker as effective in gathering cotton as the reaper and mower are in gathering grain and hay; how to photograph in the colors of nature; how to throw high explosives with safety from ordinary guns. But why continue a list which every one can make for himself differently, as he looks around his individual horizon? We may be certain that, upon every problem that is now recognized, intelligent thought is at work. The gems are hidden in the ocean depths.

HOW TO SUCCEED AS AN INVENTOR

By THOMAS A. EDISON

THE young man who wishes to succeed as an inventor should never lose sight of the fact that nearly all great inventions are the results of logical and carefully made deductions from natural laws. Those which are the outcome of accident or chance are such rare exceptions that they confirm the general rule. In my own labors I have always had some well-defined object in view, and the great majority of my inventions are the result of patient labor and of experiments often continued for years. For instance, the automatic recorder prompted the automatic repeating telegraph, and the latter, in after years, led to the phonograph. It was in 1877 that I finally succeeded in perfecting an instrument which recorded telegrams by indenting a strip of paper with dots and dashes, and also repeated a message any number of times and at any rate of speed desired. Now, as a logical sequence, it occurred to me that if the repeater would again give forth the click of the telegraph instrument, the vibrations of a diaphragm should also be susceptible to similar record and reproduction, and I at once began the series of experiments which led to the phonograph.

The electric light is another illustration of my theory of invention. None of my inventions has cost me so much time, labor and study as did that; and though I, myself, never lost hope of ultimate success, some of my associates were often discouraged and despondent. I would frame a theory and follow it up until I found it did not conform to the facts at my command, when I would discard it and construct another that for the moment seemed to answer the purpose. Thus I evolved three thousand different theories before I finally secured that for which I was seeking, and confirmed the principle upon which I had been acting from the first. During this time I read hundreds of books bearing upon the subject, but the aid I secured from this quarter was small; indeed, I am seldom able to find what I want in books. To secure the best material for the carbon filament used in the light, my agents ransacked all parts of the globe, and it was not until a hundred other things had been tried and found wanting that the shred of bamboo now employed was settled upon. Patience and continuance are indispensable to the successful inventor.

He should also be a capable man of affairs. Many of my own inventions have been very profitable, but I have made money as a manufacturer and not as an inventor. I would have been a gainer if I had never taken out a patent, and, in most cases, my advice to the young inventor would be to refrain from doing so. A certain mechanical operation may require the time and labor of forty men, but some clever fellow invents a machine that will do it with the help of only one man. As long as he keeps the machine to himself, he will have a monopoly of the market; but if he takes out a patent, in nine cases out of ten his idea will be stolen, and as soon as his rival secures a similar machine, his invention will have lost its value. As a matter of fact, many of the most valuable inventions have never been patented, and are kept as secret processes. Stub steel is used all over the world for making certain kinds of fine springs, and yet there are only two or three people now living who know how it is produced. It is made by an English family, and the secret has been handed down from generation to generation for nearly two hundred years. The holders of the secret have made a fortune from it. Sealskins are dyed at only one place in the world — London. The secret was discovered by a Vermont man, who carried it to England, and the process has been kept there ever since. Thousands have been expended in experiments, but no one has yet been able to successfully imitate it. I could mention many other products in common use whose manufacture is a secret, one workman knowing only one part of the process, and not the whole of it, as a rule. Most of these products are made in Europe, like Chartreuse, the secret of which is kept by the monks at the monastery of that name, where the liquor is made. But the practice of keeping processes of manufacture secret is growing in this country. Strangers are denied admission to many of our largest factories for fear of some secret process leaking out, and the workmen are sworn not to divulge the facts. The Dupont powder works, on the Brandywine, is a striking example of this policy of secrecy as practised in America. The Duponts have rarely if ever taken out patents on any of their processes, but hand them down from father to son, and the workman who enters their employ usually remains with them as long as he lives.

The inventions which under present conditions are making the most money are not the big but the small ones. Their insignificance protects them from the pirate, who fails to discover that there is money to be made by stealing them. Still, my advice to a young inventor would be to study the expensive operations of all large factories — every operation, you know, is expensive in proportion to the number of men required — and try to devise a machine with which fewer men could do the work. The wealth of the modern world has been made by labor-saving machinery; but no matter how fast it may be increased or how often it may be

multiplied, there will always be plenty of work for all, for the workmen set free by the invention of a new labor-saving machine soon find employment in some other field of usefulness. Wealth is the product of labor, and the machine that saves the latter also saves the former, and adds to the general sum of wealth. Thanks to machinery, as much wealth is now produced and saved in a single year as was formerly produced in a century, and by the same means the United States has caught up with and passed the older countries of Europe. A few years ago steel rails cost $125 a ton. Now a manufacturer brings two pounds of ore from Lake Superior to Pittsburg, a pound of coal from the mines of the Monongahela Valley, a pound of manganese from the South, and a pound of another ore from the West, and with these he makes a pound of steel and sells it for a fraction of a cent. This shows what labor-saving machinery can do. The end has not yet been reached in this field, and it is still possible for a young inventor to devise a machine for some operation essential to the manufacture of steel which would save the labor of a number of men. Then if he went into the manufacture of that one product on his own account, he could hold his own with all the other manufacturers and undersell them as long as he kept the machine a secret. There is no better method by which the inventor in these days can get the full benefit of his invention.

What will be the general tendency of invention in the near future? That is a question which no one can answer with certainty, but I think for many years to come, invention will deal in the main with securing greater economy of motive power. The turning of coal into motive power without the intervention of steam will be one of the next great triumphs of the inventor. I have for some years been at work on the problem of turning coal directly into electricity. I have clearly demonstrated that this can be done, and it now remains to be seen if it can be done at a profit. It would be a great thing if we could run a steamship or locomotive for one-sixth of what it now costs, and I believe it can be done. Let me add that machinery is settling the labor question, and in favor of the laborer, who is every day becoming worthier of his hire. The multiplication of machinery in the last fifty years has doubled wages, while reducing the cost of living one-half. When motive power is still further cheapened, the laborer will be master of his own destiny, and the labor question will cease to exist.

INVENTION AND ITS RELATION TO WAR

By HUDSON MAXIM
The Inventor of Smokeless Powder and Maximite

NO MAN can have greater power of prophecy than is based on accurate knowledge and understanding of past events and their tendencies. We can judge only of man's future work from what is foreshadowed by past achievements.

It is a far reach from the cluster of dens and caves of the Paleolithic savage to the civilized home and the modern city. Man's tastes were then simple and his needs few. His passions and appetites were strong, and when sated he lay dormant until again stung to activity by their return. He understood nothing of the nature of the forces that brought the recurrent seasons, nothing of the sunshine, nothing of its eclipse, or why the tempest blew. He cowered at the tongues of fire that spoke with thunder voice in the storm. The rivulet sang then as now, but to him its voice was not a song. The river rushed and foamed across his path in its descent to the sea, but he understood nothing of the source of those waters — how the sun lifted them from the earth and ocean, to fall again in rain and give the sap of life to all the bloom and green of field and forest.

It required long centuries for the dull brain and the unaccustomed hand to shape the simple stone hatchet and the arrowhead of flint or bone. The first architect who made his habitation of logs and boughs was indeed an inventive genius of his time. Impelled by his powerful passions, appetites, and needs, man has, through the ages, been grappling with the forces of nature to understand and conquer them to his use. The youth of to-day, endowed with the rich inheritance of ages of accumulated knowledge, with capacity to wield and utilize that knowledge, is possessed of might to shame the fabled gods of antiquity.

We learn the complex from the simple. We can only arrive at the abstract by way of the concrete. It is easy to understand how man's first needs impelled him to construct implements to aid him in the acquisition of the necessaries of life, to enable him better to battle with the fierce denizens of the forest and bring them to his fect for food, and give him their own covering for clothes, or to defend his humble home against his still fiercer fellow-kind. That was the dawn of mechanics. His implements, simple as they were, marked a vastly greater stride in

human advancement than all the achievements of the nineteenth century. Long ages were required to replace the stone with bronze, and ages again before the bronze was replaced by steel. Then intervened the Middle Ages of superstition; it has been less than a hundred years since the white man burst from the chrysalis wherein he had been caged by fear. It is but recently that he dared reach out and grapple with all of nature's forces without fear to understand or fear of profanation; and now the scientific inventive man recognizes all nature as the rightful field for his operations, investigations, and conquests.

When the great ice sheet had melted from the face of Europe, in recent geological years, the new opportunities presented by the changed condition had upon our race a character-building effect, adapting it to the great possibilities of the present era. The closing of the glacial epoch was a great geological springtime — a period of rejuvenescence, when, with the expansion of land areas and all the concomitant opportunities, man's mentality was also expanded. As environment shapes the character of the individual, so it affects the race. The quick eye, upon which security depended in the remote past; the strong arm with which to strike for food or life; the awakened sense, trained in battling with the wild beasts of the forest and with yet more savage men — were all builders of that brain which now builds the locomotive within an ark of safety, defies the ocean's hurricane, harnesses the lightning in the service of man, and brings the whole earth within touch of the family.

The discovery of America, with the mingling of races under changed conditions of life — in a new world offering greater resources and possibilities, above all, greater freedom — has made almost a new race of men; a race having a more independent way of thinking, one reasoning more from experience and less from theory and dogma — a race more resourceful, active, and determined. The greatest influences to break the chrysalis of mediæval superstition and clear the mind for action have been exerted by Americans. Braver than those they left behind, a daring few who placed themselves on the bleak New England coast — with the great ocean behind and the unbroken forest, filled with savages, before — were of the right spirit, and in a suitable environment, to pioneer a strong and inventive race. The substance that could be grubbed from the barren soil in the brief summer was not sufficient for the long winter, without recourse to every expedient that human ingenuity could devise. Stern necessity was then, indeed, the mother of invention.

A few generations have swept away the wilderness and the Indians. Workshops and factories dot all the waterways, where is produced every conceivable thing, mechanical and scientific, demanded by our civilization. Labor found honor in New England, where inventive genius

brought both praise and reward. As a result of these genius-building conditions, America has produced probably more than seventy-five per cent. of the inventors and inventions that have revolutionized life. New Englanders and their descendants, multiplied and scattered throughout America and over all the earth, have led and still lead the inventive genius of the world. But for the inventor, we should all be running wild in the forest, clothed with leaves and the skins of beasts. It is the inventor who has taken man out of caves and hovels and placed him in mansions; who has developed every convenience and every luxury of modern life; who has made this earth a fit abode for something better than simple savages.

Truly, "Necessity is the mother of invention." Without needs there can be no progress. Labor is the great factor formative of genius. Love of labor is indicative of true genius. It is an unvarying rule that love is an accompaniment of capacity, because of the pleasure in the exercise of strong faculties. Capacity for work and a disposition for usefulness are inseparable concomitants of happiness. Those animals are the most intelligent which are endowed with the best faculties for the examination of things, and man is no exception. The thumb has been an important factor in the development of mental faculty, which, in turn, has made of the human hand the most wonderful of instruments.

The complex conditions of civilized life are constantly forcing upon us new capacities for usefulness. As these conditions become more and more exacting, we are all required, in one respect or another, to be geniuses — although universality of genius becomes impossible by reason of limitations of time, attention, and endurance. Civilization demands that labor be divided and functions specialized. Love for the work in hand is the mother of its success.

Intellectual acuteness is always much in proportion to necessity. A young man may well console himself in poverty, for it may prove a greater aid to true success than the wealth of Crœsus. The peoples of the northern nations who have had to contend with the winter's cold, and to war with the wolf of hunger through the long months of frost, are far superior intellectually to the inhabitants of tropic climes. With the increase of necessity, the alertness and sagacity of the individual, who must meet the changed conditions, is also increased, else he must perish. Such is the history of the race. It is obvious that nothing could so stimulate man to effort, and to the exercise of inventive faculties, as war, calling for the defense of life and home on the one hand, and offering on the other the coveted rewards of conquest.

The fighting instinct has, perhaps, been the ruling trait of our race from remote antiquity, where fact blends with fable. The sun of civilization's dawn broke through a war cloud, and the light it has since shed

on mankind has shone through rifts in clouds of war. The inventive and fighting instincts have made ours the dominating race. These are the instincts that have cleared the land of forests, spread industries and civilization over vast continents, and united them with ties of trade, reducing the ocean to a ferry.

It is natural, then, that the field of Mars should offer especial opportunities to inventors. No branch of industry has played so great a part in the civilization and enlightenment of mankind as has the development of implements of war. Without the stimulus afforded by the constant menace of neighboring powers, a nation may allow its arts and sciences to remain stationary, as China has done for the last thousand years. Stimulated by the menace of war, however, all this is changed, and the ingenuity of the people is taxed to its utmost to meet the peril.

The discovery and introduction of gunpowder called for a complete revolution in all military implements and operations. Since then, improvements in weapons have kept pace with improvements in gunpowder, and all the industrial arts have been affected and benefited.

In "Sartor Resartus" Carlyle says: "The first ground handful of Niter, Sulphur, and Charcoal, drove Monk Schwartz's pestle through the ceiling. What will the last do?" His own answer is: "It will achieve the final undisputed prostration of Force under Thought, of Animal Courage under Spiritual."

Again Carlyle says, in the same work: —

"Such I hold to be the genuine use of Gunpowder: that it makes all men alike tall. Nay, if thou be cooler, cleverer than I, if thou have more Mind, though all but no Body whatever, then canst thou kill me first, and art the taller. Hereby, at last, is the Goliath powerless, and the David resistless; savage Animalism is nothing, inventive Spiritualism is all."

The debt which civilization owes to gunpowder is one of the greatest that history has to record. In every land, and upon every sea, gunpowder stands guardian over all the accumulated wealth and progress of the nations. The development and perfection of gunpowder has tasked the genius of the world for a thousand years, culminating in the production and perfection of the smokeless cannon powder of the present time, at the head of which, that adopted by the United States Government unquestionably stands. The harnessing of that energy which now can hurl a half-ton bolt of steel through three feet of solid iron has been a giant task. The modern high-power gun in its building has reacted with immense advantage as a developer and builder of the arts and sciences.

The modern battleship is to coming generations a lesson of the nineteenth century. The implements of war invented during the last hundred years will serve to write on history's page more clearly than those of

any other branch of human effort the story of the world's work. The earth-jarring thunder of the seacoast gun — the hum of the great steel bolt as it speeds along its way — the crash into the toughened steel ribs of the battleship — are all voices that speak of the high development in the arts and sciences of this inventive age of which chemistry is king. Electricity, steam, and gunpowder, are the great Triumvirs that have been the architects of the modern world, and the pillars of the whole structure rest on chemistry.

When we compare the present position of military science with that at the opening of the nineteenth century, the strides are truly marvelous. We of the last century received from our fathers the flint-lock gun loaded at the muzzle by means of a ramrod, with powder, wad, and ball, carried separately. The artillery we received was a cast-iron tube, a bag of pulverulent black gunpowder, and a round, solid, cast-iron shot. The soldier slept in the field, with nothing over him but a blanket and the sky. The battleship of our fathers was a rude, wooden hulk, which crept about under sails, and was the victim of the freaks of the wind and the sea. It was lighted at night by the tallow candle, or by an ignited rag or torch fed from a bath of grease. All that was known of the whole science of chemistry could then have been told in an evening's lecture, while electricity was only a curiosity. These were the conditions that prevailed a hundred years ago. We now have the breech-loading magazine rifle and smokeless powder, the machine gun, with its stream of one thousand bullets a minute, and breech-loading rapid-fire artillery, capable of hurling such a storm of shrapnel and canister as to render it as impossible for an enemy to advance through the open and not be struck as it would for one to pass through a thundershower and not be hit by a raindrop.

The children of the nineteenth century have harnessed many of the agencies of nature, but the most marvelous of all has been the impressment into man's service of that most subtle of all — electricity. It is quite impossible for a person reared at the present time to appreciate what life would be without electric cars, the electric light, the telephone, and the telegraph.

Nowhere are electrical inventions more indispensable to-day than in naval and military science. Armies reconnoiter under the guidance of the telegraph. They can advance no faster than wires are laid and telegraphic communications established. The balloon, which gives a vantage view from the sky, can be spoken through a wire by the commanding officer in the field. Electricity has taught the artillerist the exact velocity of his projectiles, and how far his gun will carry.

Let us assume the existence of war, and imagine ourselves aboard a battleship, where the searchlight — that keen electric eye — penetrating

the night in defiance of the storm, is an ever-watchful sentinel at the post of danger. A small torpedo craft is sighted, advancing with hurricane speed, armed with its submarine messenger of death and destruction, one blow of which, and our huge steel leviathan — worth a king's ransom — with its thousand souls on board, is sent to the bottom of the sea. But the electric eye has seen it — the searchlight rests upon it — and it looms up, a brilliant target in the night, while hundreds of shot and shell are hurled within the space of a minute upon that brilliant spot, and it is destroyed. Still the long bars of light sweep the horizon, and there is a dark mass discovered, advancing at almost railroad speed. It is a battleship of the enemy, the sea is heavy and our ship is rolling; our guns are ponderous and but little deflection will make them miss their mark, but they have been provided with electrical training gear. A huge tube of steel weighing fifty tons is controlled by the gunner with the ease of a child handling a toy, and with the quickness with which a rifle may be raised to the shoulder, aim taken, and the trigger pulled, the big gun is sighted at the advancing stranger. There is a flash, a roar like thunder. The recoil shakes the giant warship to her center. But a huge bolt of steel weighing one thousand pounds charged with Maximite, is hurled at the enemy. It strikes her mailed side — it passes through. There is a terrific explosion within her vital parts, and our danger for the time is past.

The importance of high explosives as a factor of our modern civilization, in peace as well as in war, is not fully appreciated by the multitude. The invention of dynamite by Nobel placed in the hands of the civil engineer a new force ten times more powerful than gunpowder, and his work has been correspondingly facilitated and accelerated. As the ax is to the woodman, so are high explosives to the civil engineer — more, they are the ax and the spade with which he cleaves the mountain range to let the iron horse pass, and like the Martian, cuts through the land a webwork of canals and waterways, uniting rivers and seas. With high explosives he smites the rugged ribs of the earth, and the yield of a day in mineral wealth would shame Solomon in his glory. Since the time when the great Hannibal with fire and vinegar cut through the white Alps, and burst like an avalanche upon the fair fields of Italy, in the vast strides that have been made in the science of overcoming obstacles to human progress, the blasting agent has played no minor part.

The last century has been a period of such wonderful achievement in every branch of human effort, and such marvelous things have been accomplished, that we may reasonably look forward to similar results in the next century.

Taking this view of the matter, some very extraordinary, and, I may say, chimerical, things have been suggested as coming possibilities.

Numerous are the novels that have been founded upon conceptions of inventions which would be absolutely impossible in this material world. We have heard of disintegrators — certain electrical machines which are to destroy armor-plate at a great distance with etheric vibrations. Such prophets have foretold electrical devices by which powder-magazines of battle-ships shall be exploded. We are told of torpedo-boats and other war vessels which will be manless, and controlled from the shore through enormous distance, enabling naval battles to be fought without human sacrifice. Some very terrible devices have been prophesied for land warfare, by which whole armies are to be smitten with an electric shock, and destroyed in an instant. Flying-machines have been promised, which will be capable of carrying ship-loads of passengers and freight, and, in war, even heavy guns.

While the future has in store some marvelous inventions and some great surprises which will exert a revolutionary influence in warfare on both land and sea, nothing supernatural is going to happen.

Furthermore, it must be borne in mind that, although we have witnessed the most extraordinary developments of the arts and sciences by inventive genius during the last hundred years, still there were certain things a hundred years ago which were well-nigh perfected, and which, therefore, have not been materially improved. The ax with which the woodman fells the tree is essentially the same ax that Hendrik Hudson gave to the Indians, the use of which they misunderstood, and which they hung about their necks as an ornament. The modern sword, the spear, and the cutlass, are no better than Damascus blades or those of Toledo.

The steam-engine is recognized to-day as having reached about the limit of its perfection, so that we are able now to make this pronouncement without fear of rational contradiction — that the genius of the next century will not and cannot advance steam engineering to a like extent.

Electricity is a new science, practically a child of very recent years, and by the close of the twentieth century it is possible that electrical engineering will have reached a similar approach to perfection to that now attained by steam engineering. The strange and the marvelous always have a charm for the human mind. Electricity is less understood by the multitude than are the simpler problems of mechanics. Electrical science is circumscribed, however, by the same inexorable natural laws as are all those things which we better understand, and it is just as impossible to accomplish impossibilities by means of electricity as with steam.

The improvements which are most probable in naval and military science will be along the lines of mobility. The ponderous armorclad will become obsolete within the next fifty years,— possibly within the next ten years,— and will be replaced by the swift cruiser with very light armor, or with no armor at all, and with small torpedo-boats capable of

traveling at an enormous speed. The warfare of the future, on both land and sea, will be largely one of high explosives. The question of placing high explosives to best advantage is a problem for the next decade.

It is probable that the most marvelous accomplishment in the field of electrical science, which will be utilized in future warfare, is an invention of the latter part of the nineteenth century. I refer to wireless telegraphy. The far-reaching utility and influence of this discovery — for it is a discovery as well as an invention — is destined to be very great, especially, as by future improvements, its range shall be increased and the invention simplified.

Invention offers a field of endeavor to young men, unequaled in opportunities and possibilities, and America, of all countries, is the most favorable to enterprise. For an invention one can secure a patent giving him a monopoly of the fruits of his genius. Although our patent laws are faulty, like all human institutions, still they are the pillars which support the edifice of American industrial achievement.

The best advice to a young man who would become an inventor is: First acquire all the knowledge you can of natural laws and the nature and use of common things, and above all, the laws which govern man in his social relations, that you may learn his needs, and how the changed conditions, produced by the introduction of one invention, pave the way for new wants requiring new inventions. Keep your eyes open and your wits always about you. One can acquire knowledge only in proportion to his ability to ask himself questions. If you would be a successful inventor, you must learn the magnitude of minor things and the littleness of even the greatest things. Whenever you see imperfection in the work of others, study that imperfection, and try to invent a better way. When you see a truly wonderful mechanism, do not take it for granted that it is perfect, but try to invent a way of simplifying it or of making it do its work still better. Never be deterred by the fact that others far superior to yourself in knowledge and experience may have spent a lifetime perfecting what you are attempting to improve. Remember that photography, as an example, owes its high state of perfection to the discoveries and inventions of amateurs more than to professionals. A boy eighteen years old invented the revolving turret, which was afterward utilized by Ericsson on the "Monitor."

All progress is born of inquiry. Doubt is often better than overconfidence, for it leads to inquiry, and inquiry leads to invention.

Remember, too, that great inventions are never dreamed out, they are always wrought out by wide-awake thought. Bryant said:—

> "Deem not the framing of a deathless lay
> The pastime of a drowsy summer day."

So with invention. It is always the reward of work. Great inventors are always great workers. No man can be a great inventor until the act of inquiry and invention becomes a passion and the passion becomes his master. No man is lazy at the job he loves, and no man invents anything when he does not love his job. The pleasure of making a new discovery, the pleasure of being the first to think of a better way of doing something, is often the source of the keenest delight of which the human mind can be conscious.

When the stimulus of inquiry — the spirit of invention — is once introduced, then the hardest work is never drudgery, but drudgery becomes a pleasure, bringing profit and success.

CONDITIONS OF SUCCESS IN MANUFACTURING

By J. C. BAYLES
Formerly Editor of "The Iron Age"

IN THE ultimate analysis, almost all human industry is a form of manufacturing, more or less complex according to circumstances. The orderly arrangement of unrelated parts, and the bringing into artificial combination of forms of matter not associated in the economy of nature, is manufacturing, whether limited to the making of unglazed pottery and the weaving of mats from stained rushes, or expanded and differentiated as we find it in countries like our own; in which a high and regularly developed civilization finds its distinctive characteristic in a progress of the arts and sciences so rapid, that it is followed with difficulty even by those who contribute to it. Thus the economist recognizes in manufacturing the basis of all orderly and systematic human activities. Under the conditions of civilized life one cannot get so close to nature as to be even temporarily independent of the skill and industry of the mechanic. If he plunges into the wilderness, he needs the firearms and ammunition of the highly organized factory for his defense against wild beasts. He clears the forest with an ax which no blacksmith could forge by hand. He breaks the virgin soil with a plow which implies the preëxistence of a mine, a blast furnace, a foundry, a wood-working shop, a rolling-mill, a nut and bolt works, and perhaps a dozen minor industries. The spade and hoe, with which he performs the operations of crop planting and

tending, mean another system of organized industries which are the result of centuries of development from the archaic types of hand-wrought tools. The appliances for reaping and harvesting are made for him by skilled mechanics, whose intelligence is expressed in the construction of machinery possessing, in arms of iron and fingers of steel, more than human dexterity and precision. His grain is threshed and cleaned by machinery; it is carried in wagons to car or vessel, and ultimately reaches a market as flour, after treatment by one of the most exact, rapid, and economical manufacturing processes known in the arts.

What has been said of farming is equally true of mining, lumbering, and the crudest processes of taking raw material from the earth. The mechanic supplies the means by which even the rudest labor is performed; to be a manufacturer of something useful is to render society an essential service. To manufacturing every material industry is tributary; upon it every material industry is dependent.

The young man who elects a career identified with some department of manufacturing need not be hypercritical in the choice of fields for the employment of his talents and energies. The farmers have a proverb that, "There's more in the man than there is in the land," which embodies a good deal of practical wisdom. Of manufacturing it may be said that there is more in the man than there is in his trade. Generally speaking, any industry which produces something useful, meeting a general and permanent want, not subject to the caprices of arbitrary fashion and not contrary to the public policy, is, in the average of years, as good a business to follow as any other. As a rule, selection is the result of the accident of opportunity. Wherever this leads the industrious and ambitious young man, he will, usually, find himself as well off as if it had led him elsewhere. Such dissatisfaction as he may feel with his lot in life will be seen, on close analysis, to be due either to an exaggerated idea of favorable conditions existing in lines of business with which he is unfamiliar, or to a lack of qualities which are as essential to success in one business sphere as in another. In either case he will be encouraged by recalling the quaint couplet of Herrick, which I once found hanging in the billiard-room of a manufacturer whose success had astonished two continents: —

> "Man's life's a game of tables, and he may
> Mend his bad fortune by his wiser play."

I knew a boy who needed work, and after some search for just the kind of work he wanted, took what he could get at the moment, a place in a little shop where certain sheet metal specialties were made. It seemed like a start, not merely at the foot of the ladder, but at the bottom of a deep hole into which no ladder extended. The lad was not a

genius in any sense, but he had good habits, good judgment, and the capacity for practical thinking. He kept his eyes open and observed that there was need in the market for a better, safer, and cheaper lantern than he could find in the stores or in the catalogues. So he went to work to make a lantern. It did not call for the exercise of inventive faculty in any high degree. What it needed was what he had already given it — thoughtful study from two view-points,— that of the maker and that of the user. He built a lantern and tested it at night until the results were satisfactory. Then he began the designing of certain simple machines which should produce its several parts cheaply and accurately. He was neither an engineer nor a draughtsman, but he had ideas and was able to make them intelligible to others. As the final step, he arranged with his "boss" to make the lantern for a small royalty to himself. It was exactly what the trade wanted. The shop became a lantern factory, with the inventor as superintendent. It grew and kept on growing until it became a great factory. It made the inventor rich in less than half the life of the patent, and was then capitalized for a million dollars, of which the inventor received four-tenths for the sole manufacturing rights, and a large salary as president and general manager. Industrial biography is full of such instances.

Most readers are familiar with the condition of the manufacturer before the days of machinery and power, when he was an artisan and his qualifications were largely in his manual dexterity. He began as an indentured apprentice, and wasted years in learning what the young man of to-day can learn in months. When his apprenticeship was finished, he became a journeyman, traveling from place to place seeking employment to gain the experience impossible of acquisition during the long period of almost menial servitude to a master. Where his wanderings might lead him, and in what condition it left him when completed, depended largely upon himself. If successful in making a satisfactory alliance, he might expect in time to become the partner and successor of his master, especially if so fortunate as to marry his fair and virtuous daughter. The man who chose this life elected identification with a caste which, under no conditions, permitted him to rank above the inferior social status of a "base mechanical." Every swashbuckler who wore a sword or sported even the tattered remnants of a military uniform looked down upon him as one whose fat purse was the rightful prey of the soldier of fortune clever enough to get it. He might, later in life, become an alderman or a burgomaster, but even in a station of civic dignity he was still of the tradesman class, useful to furnish the king, the nobility, the gentry, and the cut-purse the means of living without labor, but having himself only such rights as he dared assert at the risk of life and liberty, and was able to defend with stout cudgels and such other weapons as were

permitted the common people. It was a life which had its compensations, but it finds no parallel under modern conditions, where the successful manufacturer is the counselor of monarchs and the mainstay of governments. Lessons and precepts drawn from the traditional wisdom of the centuries anterior to the nineteenth have very little value as guides to success in individual achievement. All that remains worth considering of experience in manufacturing, prior to the revolution which brought about the conditions now existing, are the homely precepts relative to industry and thrift, which crystallize eternal truths.

With the advent of the steam-engine and the gradual entry of the labor-saving machine into the domain previously monopolized by the artisan, with his endowment of manual dexterity, all the conditions changed. Without following the successive steps of the change, it is sufficient to say that the "all-round mechanic" found his sphere of usefulness gradually narrowed, and his skill brought into competition with the more useful practical knowledge of the specialized mechanic.

The young man who elects to become a manufacturer will find various careers open to him, but he should divest himself of any mistaken notions as to the steps he should follow to win an honorable success. It is possible, under conditions sometimes obtaining, to begin by "learning the trade" — to rise by sheer force of character and natural capacity, step by step, from the bottom to the top of the ladder. Indeed, it is frequently done, but the opportunities for doing it are steadily diminishing.

For all but perhaps one in fifteen or twenty thousand young men, the only opportunities offered for careers in manufacturing lines are in those which produce the standard articles of general consumption. The shotgun, which scatters its leaden pellets over a constantly widening area, and makes an approximate aim deadly at short range, does very well for small game, but the grooved rifle, sending a bullet to a spot no larger than the end of one's finger, is the only effective weapon for anything which offers resistance or repays the taking. The man who can make shift to "do anything" in the way in which the general utility man usually does it, finds his way inevitably to the scrap-pile of human failures. For the man who can do something better than others can do it, the way to success is always open, and his opportunities are what he is pleased to make them.

The young man who elects to follow a career in manufacturing should study his natural qualifications, and determine what general class of work he is best fitted for. To be master of something will give him the pass-key to many tightly-closed and well-guarded doors. To have command of even large capital, will not insure him a successful career. Large capital has, in many instances, been dissipated by injudicious manufacturing investments; it has been shrewdly

remarked that it requires more talent to manage capital wisely than to accumulate it. The shrewd man of affairs will usually display more capacity in avoiding losses than in gaining profits. Capital suggests a comparison between itself and a boat running the Lachine Rapids. If it is started right, it is carried safely through by the force of the water; if started wrong, or unwisely diverted from the path of safety by the nervousness or ignorance of the pilot, it is inevitably wrecked.

A manufacturing business organized on any scale above that of the cobbler at his bench, or the farrier at his anvil, naturally divides itself into four departments: Producing; selling; accounting; executive management.

To excel in any one of these widely dissimilar departments of business activity is as much as the average man can expect to accomplish in an average lifetime. Time was when the best, and indeed, the only, method of preparation for the management of a shop was to "learn the trade" and to work at it until every process was familiarized. By this means a man became "practical," and to his ability to take off his coat and perform with his own hands every operation of the business, was attached a wholly fictitious value. Some may still find this method of gaining knowledge, so wasteful of time and tissue, the only one open to them, and may possess a mental endowment so exceptional as to attain by it the position of a master. The difficulty with this method is that it teaches only practice, and imparts none of the general knowledge, by means of which practice may be improved and made to conform to the requirements of industrial progress.

The young man with the usual grammar-school education, who, fired with the laudable ambition to become one of the "captains of industry," enters a shop to learn the business practically, has many unexpected discouragements and disappointments in store for him. He will find it easy enough to put himself in the front rank of the wage-earners, and to command the respect and confidence of his employers. They would be glad to fill their shops with men just like him. He may become an assistant foreman or a foreman, and earn what is considered good wages. But when vacancies occur on the staff of the general manager, or heads of departments are needed, he will notice that young men who wear good clothes and whose hands do not show stains, scars, and callouses of the shop, step into these vacancies and somehow manage to fill them successfully. If he makes inquiry as to the antecedents of these intrusive strangers, he will find them to be graduates of the technical schools, who may or may not have had experience in minor positions elsewhere. If he comes into such relationship with them as is easily possible without breaking the rules of shop discipline, he will discover that they know a great many things of which he is ignorant. Their

horizon is broader than his; they think and reason on a plane to him inaccessible. Between his ignorance of theory and of the application of the higher mathematics to useful ends, and their intimate knowledge of principles, there is "a great gulf fixed," which may be crossed only as the result of the most sacrificing devotion to the labor of self-education. He soon recognizes that, no matter what he may become, many of the doors to advancement that he had hoped to force by the display of character and capacity, by tireless industry, and a careful regard for the interests of his employers, are effectually closed to him by reason of the limitations of his education and his unfitness for managerial duties which demand a knowledge of physics, mechanics, chemistry, and mathematics. His mistake was in overlooking the changed conditions of industrial organization, and in seeking to approach the control of production by a path which almost invariably leads only to the bench, and stops there.

In what precedes, I have attempted to generalize from average experience. A hundred, or perhaps a thousand, cases could be cited in which, with few opportunities for an elementary education, and still fewer for the acquisition of thorough shop training, great mechanics have come to the front and won fame and fortune through substantial achievement. The greatest men of this class that I have ever known would have been greater, the most successful would have found success easier, and more satisfactory when gained, if they had not been handicapped at every step by the lack of acquired qualifications. It is a safe general rule that the young man who has the ambition to succeed in the department of a manufacturing business which deals with production, should prepare himself with the best technical education he has the means and opportunity to acquire. He will have constant use for every scrap of general knowledge that he can gain. Chemistry, physics, mechanics, and mathematics, are the essential tools of a great mechanic. To say that some have done great things without them is to state the exception which proves the rule. These same men could have done greater things with them.

From the technical school, the young man should enter the shop in any capacity offered. He is not expected to serve as a consulting engineer, and does not need to wave his diploma or parade the initials indicative of his academic degree. An incident came to my notice quite recently which is instructive and worth repeating. A bright lad, with a clear title to write A. B. and M. E. after his name, went to work in a shop where an air compressor was used under somewhat peculiar circumstances. His duty was to run this compressor, keep it clean, and do whatever else the foreman thought him fit for. No one knew that he was an engineer with a degree, or that he could have played schoolmaster to foreman and superintendent. He took good care of the machine under his charge, but the governor gave trouble, and the representative of the

makers was sent for. He came, looked it over, and spent a fortnight trying to make it work properly. Then another man of higher rank came and spent another week on the same job. The young man answered questions respectfully and asked them so intelligently that he soon gathered a great deal of useful information. Among other facts he learned that a simple, practical, and reliable governor for air compressors was greatly needed, and that to devise one would repay the effort. He got out his books, read all the available literature on air compressors, and went to work on the problem.

In about three months he had found a new principle in air compressor governors, had worked out its formulæ under all conditions of constant and variable pressure, had made a full set of drawings, had them dated and witnessed, and was ready to "talk business." He approached the superintendent of his own shop, but got no other satisfaction than that the concern had no money to waste in amateur experiments with other peoples' machines. He then wrote to the general manager of the works which built the compressor, giving a brief statement of what he had done. By return mail he received a railroad ticket and an invitation to visit the works. The result was that his idea was enthusiastically approved, an arrangement was made for patenting it in every country having a patent system, and the young man was offered a position on the engineering staff of the works, which he promptly accepted.

When he returned to the shop in which he had originally worked, it was through the office instead of the gate, and his errand was to perfect the air compressor he had tended, by equipping it with his governor. He is now chief engineer of the concern he went to with nothing but a well-considered and useful idea. If the young engineer will use what he knows in such work as he has a chance to do, the fact of his capacity for more responsible duties will soon appear, and he will find that the road to the top is open to him,—whether in the shop in which his career begins, or in another, is immaterial. He will have more opportunities than he has time to avail himself of.

The best kind of influence is the reputation of being thoroughly equipped for managerial responsibility. A man with such a reputation, combined with character and good habits, does not need to bewail his lack of capital. The latter is constantly on the lookout for him, and will find him in the middle of Sahara, if need be, with offers which influence could not secure. I know a number of young men who entered life with no other capital than a good education, who, in less than five years from the date of their start, were earning the incomes of millionaires. Some hold high offices in great corporations, others have liberal participation in the earnings of plants capitalized for millions. As I have

already shown, genius may accomplish this without the assistance of technical knowledge, but the man who depends upon genius to float him to success in manufacturing usually has none, and mistakes vanity for that endowment.

Whether the young man ambitious of success in manufacturing should choose the shop or the office is largely a question of temperament and bent. As a general rule, it may be said that if fit for one he is unfit for the other. For the young man without a pronounced mechanical bent, the office will generally be found a more attractive field than the shop. It is usually easier to make something than to sell it to commercial advantage. In a manufacturing business the skill and judgment of the mechanic must be supplemented by the skill and judgment of the merchant. The Bible gives us a significant combination — a trinity in unity — when it describes "buying, selling, and getting gain" as the three functions which are combined in a profitable transaction. Millions of men can buy and sell, but the number of those who have the instinct of gain-getting is relatively small. The fruits of the mechanic's labor will not market themselves. The selling function, in connection with manufacturing, is, as the rule, of greater value to the business than the producing function. A larger volume than this would fail to hold the records of the brilliant mechanical achievements of the past ten years, which have been complete and heartbreaking failures because the talent and industry which produced them were not supplemented by the commercial skill and business judgment needed to find a market for them and to establish them in public confidence.

The difference between making goods and profitably marketing them is similar to that which exists between editing a newspaper and publishing it. They present coördinate functions, and exist in absolute mutual interdependence. To be a successful salesman, a young man needs to develop every talent of his natural endowment. He can no more have "a system" than a physician can practise with a single prescription. He deals with all sorts and conditions of men, and must be a shrewd judge of character. He encounters all kinds and combinations of favorable and hostile influences, and must be prepared for every emergency. He is hedged round with keen competition, and must meet it without sacrifices which involve loss, unless behind the loss a large and compensating profit is visible. He must possess the capacity for close analysis in the matter of credits, or he will make more sales than collections.

These are the elements of business qualifications. In addition, he must have earlier and more exact information than others can get, or at least do get, as to trade tendencies and business opportunities. Lacking prophetic foresight or sure judgment, he must cultivate to the highest development the power of rapid and accurate generalization, and the

percentage of his mistakes must be small. He should be capable of forecasting the future shrewdly, and needs to keep his eyes and ears open to indications and warnings which, if unnoticed or unheeded, may involve the loss of great opportunities or the encountering of great dangers. The very highest commercial talent which can be employed is needed in connection with modern manufacturing operations, and the young man who has it, or can acquire it, has before him a career in which every avenue leads to success.

The young man who undertakes to be a salesman under a competent general manager must look out for himself, as his employer is likely to set all kinds of traps for him. Shrewd managers have many ways of "keeping tab" on their outside men. One has what he calls his "graveyard," an almost impossible field, where the man who can get business is rated a success from the start and has the best chances thrown in his way. Another has confidential relations with customers, who size up a new salesman and report how he behaves himself and what sort of impression he makes. It is results which count in the end, however. Too fierce an onslaught for business usually defeats its own ends. As the late A. L. Holley wittily remarked: "A boiler which will get up steam in three minutes, may be expected to do almost anything in the next three minutes."

The real talent of the salesman was well illustrated by A. B. Gates, general agent of the United States Life Insurance Company. Mr. Gates was walking down Broadway, when a man in a great hurry attempted to cross the street, slipped on the pavement and had a narrow escape from getting tangled up with a truck. Mr. Gates saw the incident, buttonholed the man the moment he reached the sidewalk, said something to him which others did not hear, and before he released him had taken him to the company's office, put him through a medical examination, and had insured his life for ten thousand dollars.

A good story is told of a clever salesman employed by the Bethlehem Steel Company, who corralled a party of Russian officers who had come to this country to place a government order for armor-plate. He entertained them at luncheon in a style worthy of the company he represented. He realized, however, that his guests were a bit offish, and saw that he must do something quite unusual to capture them. After the luncheon toasts were offered and drunk, among others, one to "His Imperial Majesty, the Czar." Every Russian drained his glass, snapped the stem, and threw the fragments over his shoulder to the floor. They explained that when the health of the Czar was drunk, no loyal subject would leave his glass in condition to be profaned by other use. This gave the salesman an idea. Making sure that the door behind him was open, and that he could make a run for it, he offered a toast to "His Excellency, the

President of the United States." The moment it was honored he took a double hitch on the tablecloth and started for the door, sweeping everything to the floor in a promiscuous wreck. The Russians were astounded, and on demanding an explanation were gravely told that "when the toast to the President is drunk, the patriotic American makes it his business to break every dish on the table." The Russians were delighted. They slapped him on the back, shouted over him, and pronounced his performance the greatest thing they had ever seen. It cost the company about $300 for dishes and glass destroyed, but the salesman got the order.

In manufacturing, the function of accounting possesses a steadily increasing importance. By accounting I do not mean the perfunctory bookkeeping which was once considered sufficient. Keeping manufacturing accounts is an art by itself, and some of the brightest minds in the business world have found a lifelong employment in seeking solutions for the modern riddle of the sphynx: What is the cost of goods, and how shall that cost be apportioned so that every part of the production and distribution may bear its fair share of the expense and receive its fair share of the profit? I have compared this to the riddle of the sphynx in the classic fable, for the reason that those to whom it is propounded must guess it correctly or be torn in pieces by the process of bankruptcy. Ignorance of cost, and the mistaking of loss for profit, have wrecked more promising manufacturing enterprises than all other causes together. It is no unusual thing to see a great and long-established house which has expanded its trade and paid liberal annual dividends, suddenly collapse, to the astonishment of the public and the consternation of its officers and stockholders; and to find on critical examination that it has nothing left of capital or surplus. It is difficult for one having no manufacturing experience to know how this could be without dishonesty and the deliberate falsification of the books, but it may very well happen without either, being caused by no worse wrong than dependence upon incompetence in the accounting department. Not to know exactly what his goods cost him, is for the manufacturer as perilous as sailing the ocean without a compass. The error usually lies in fictitious inventory valuations, through which the business appears to be growing rich in productive assets, when in point of fact its only tangible asset is the residuum of dry rot. Where capital and surplus have gone is into the making of goods at a cost above their selling price, without knowing until too late that nothing remains with which to continue the process.

The young man with the requisite natural qualifications who will make himself an expert in manufacturing accounts, will find that this work offers him a satisfactory career, probably bringing him many

opportunities for honorable and lucrative identification with great enterprises. Few offices are more important in an industrial organization than that of treasurer and financial manager, and it is within the truth to say that such positions are much more numerous than are men qualified by character and attainments to fill them. The subject of manufacturing accounts has a literature of its own, and may be mastered by any one who will give it the time and thought required to become an expert in any branch of applied science.

In the field of executive management, the man endowed by nature with the intelligence, judgment, and force of character, which are the basic elements of executive ability, has, in connection with manufacturing, a field in which the successes possible admit of characterization as magnificent. The vice-president of one of the greatest industrial organizations ever formed, which for nearly half a century has been one of the most powerful corporations in the world, once said to the writer: "We have no trouble in filling positions satisfactorily until we reach those which are worth a yearly salary of $10,000. From that up the difficulty steadily increases. We have now three vacancies, and to men capable of filling them I would gladly give contracts of employment for ten years at $20,000 a year. We are ready to pay more $10,000 salaries than we can find men capable of earning them." The venerable precept that there is "always room at the top" crystallizes a truth which is every year more clearly emphasized, and which is much truer than when first formulated.

The ideal executive is a broad-minded man of affairs, who is wise enough to recognize the fact that he has high duties which will not permit him to waste his time in doing things which he can have done. The moment he forgets this, and allows himself to be saddled with work which can be safely assigned to others, he puts himself in competition with cheaper men, and so much of his time as is thus employed is immensely overpaid. He need not be a man with technical qualifications; it is enough if he knows a capable superintendent when he finds him, can trust his own judgment, and has the nerve to hold his subordinates strictly and justly responsible for results. Under no conditions can he afford to assume any part of the responsibility of a subordinate. What he approves and authorizes is carried out by the latter, who must have an undivided responsibility in his sphere, or he cannot be held to an unshared accountability. The executive head need not be a merchant, but he requires a fair share of the instinct, and should perfectly understand the system by which the distribution of product is effected. He need not be skilled in the details of corporate finance, but he does require a broad comprehension of financial problems. He need not be an expert accountant, but if he cannot analyze the books of his business, and does

not know what results mean when reached, he is incompetent. This combination of qualities is possessed only by those who are born leaders of men. That they can be acquired is doubtful; that they may be developed by training, as a man with the frame and constitution of an athlete may develop his muscles and expand his lungs, is undoubtedly true. For the reason that training would never transform the club-footed, hunchbacked cripple into an athlete, it would probably fail to correct the weaknesses of a character deficient in the qualities of masterfulness.

While the executive with important responsibilities needs to guard at all times against too much concentration of attention upon the details of his own business, to know what others are doing is indispensable. The value of such knowledge cannot be better illustrated than by an anecdote of Andrew Carnegie, probably the most conspicuously successful manufacturer of this or any other country. Mr. Carnegie is not a metallurgist. He could not run the least important department of his plant to his own satisfaction. He is not a merchant, and would doubtless have wasted his time in attention to commercial details. He is not an accountant, and probably could not earn a thousand dollars a year as a bookkeeper. But he is a great executive, doubtless the greatest of modern times; he created a business which for many years dominated the iron and steel markets of this continent. The anecdote I am about to tell I have from Mr. Carnegie's own lips. Its value is found in the fact that it perfectly illustrates the manner in which the executive head of a great, aggressive, and constantly expanding business was in the habit of meeting the exigencies of his position.

One day there came to Mr. Carnegie's office in Pittsburg a party of gentlemen, who introduced themselves as a committee of the board of directors of a company engaged in the manufacture of steel products in friendly competition with the Carnegie plant. Their errand was frankly stated. Their company recognized the fact that its business was less perfectly organized and less ably managed than his, and they had come as a committee to ask if he would show them his system, to the end that their own might be improved and modernized. Under the circumstances the request was not an improper one. Mr. Carnegie met the gentlemen cordially and assured them of his entire readiness to show them anything they wanted to see in his works or his office. He disclaimed a desire to make a mystery of anything which was tributary to his success, but added that the information they wanted, while freely at their command, would be valueless to them, for the reason that they would find themselves neither able nor willing to make use of it. He then invited them to accompany him on a tour of inspection. The first room they entered was an office separated from the bustle of the general counting-room. The visitors were invited to look about them. "This,"

said Mr. Carnegie, "is the key to my business system. The man at the desk in the corner is one of my highest salaried employees. The others are his assistants. This room and the work it does cost me $80,000 a year. It does not add a dollar directly to the earnings of my business. It has no connection with design, improvement, analysis, test, production, sale, distribution, or finance. The whole work of this room is to keep me accurately advised on every point concerning which I need information. Primarily, it is my bureau of audit, and its work enables me to put my finger on any weak spot in my business as soon as it appears. It is also a bureau of information. Through it I learn what is going on all over the country, and I have no doubt that without leaving this room I could tell you more about the operations of your plant and the cost of your material and product than you know or could find out from your own records. The daily reports of this office reach me every morning, wherever I may be. They follow me to New York or across the ocean, and however much delayed in transit, the sequence is never broken. This office is worth not only what it costs, but a great deal more. It is the axis of my whole business system. My reason for saying that the inquiry you have undertaken would be profitless to you is due to the conviction that you would not recommend to your board a fraction of my expenditure for the purpose of information getting, and that your board would not approve the recommendation if you did make it. If I am right in this I will say, frankly, that it would be a waste of time to go further." The committee agreed with him, and, like the young man in the parable, "went away sorrowful."

Executive capacity is composed of many elements. Its basis is good judgment as to the policy of a business for the moment, for the day, and for five years to come. No closet man with the introspective habit of thought is capable of meeting this requirement. It demands, first, the power to estimate men and judge of their actions with judicial freedom from predilection or prejudice; second, the ability to define, fix, and respect responsibility; third, just and intelligent judgment of results, and the ability to subordinate personal feelings and friendships to a proper conception of duty. To a man who has these qualities, and whose character and life are in keeping with them, the opportunities offered in manufacturing are without limit. No matter where he starts, he can go to the top if he wants to.

All writing which is distinctly didactic in purpose, should begin with, or lead up to, a thesis. The thesis which a survey of the field warrants in the present instance may be formulated as follows: —

At no time since civilization began has the field of manufacturing offered opportunities comparable to those now presented to the man with the capacity and ambition to learn to do any one thing well.

The only challenge to discussion which this proposition offers will be discovered by those who see in great industrial combinations, mergers, trusts, and the like, the evidences of tendencies calculated to magnify the power of associated capital, and to dwarf and shrink the individual by destroying his individuality and making him an inconsequential unit in the system which absorbs, exhausts, and rejects him. The fallacy of this view is found in the fact that capital is merely the instrument by which human intelligence attains the ends it seeks to accomplish. It is as inert of itself as a hammer or a shovel. To set it usually in motion and to employ it to profitable ends, calls for the highest development of individuality of which the mind can conceive. Individuality is at a high and constantly increasing premium. The man who rises above his fellows in capacity, who can do something better than the average man can do it, who can be depended on to do it conscientiously, and who can adapt himself to changing and expanding conditions without displaying unexpected limitations, is wanted urgently in every part of our industrial system. He does not have to engage in a weary quest for capital with which to set his energies in motion. It will promptly recognize him afar off, run to meet him, clothe him with the robes and insignia of authority, and divide with him on his own terms the results produced by the combination of brains and money. The victims of the modern system of industrial organization are the men without individuality,— the commonplace, average men, who can do nothing which others cannot do as well or better.

The tendencies of industrial development, just now very marked in the direction of immense aggregations of plant and capital, so far from placing obstacles in the way of individual ambition, have multiplied its opportunities a hundredfold. Without the coöperation of the best talent obtainable, these great consolidations would be as helpless as ocean liners at sea without officers. They are constantly changing, like the groupings in the kaleidoscope, giving daily opportunities for qualified men to come to the front and show their fitness for places commanding princely salaries. To think otherwise is to ignore the obvious facts of experience.

VALUE OF A TRADE

By CHARLES F. WINGATE

IN THIS industrial age, no field offers such a future for an energetic and intelligent youth as that of mechanics. It is a mistaken idea which leads so many boys to consider it more "genteel" to run errands, sweep out offices, build fires, and copy letters, than to make hats or shoes, lay bricks, wield the saw or jack-plane, handle the machinist's file, or the blacksmith's hammer. A country which has produced such men as Franklin, Robert Fulton, George Steers, Goodyear, Bigelow, the Hoe Brothers, McCormick, Carnegie, Edison, Ericsson, Herreshoff, and Fairbanks should be proud of their achievements and encourage the rising generation to emulate their deeds.

The Talmud says: "He who teaches not his son a trade is to be regarded as if he had taught him how to rob." In ancient times even kings were required to learn trades; Queen Victoria made each of her family learn engraving, painting, or needlework, and so did the late Emperor William. Every boy should be taught to use his hands. "Any one who can learn to write can be taught to draw," says Prof. Walter Smith; and drawing is the basis of manual education.

Carlyle says: "A man is a tool-using animal," and he always spoke with reverence of the bridge which his father, the stone-mason, erected at Cromarthy. Trade-schools have become indispensable. Manual training counteracts the narrowing effect of the subdivision which tends to make a workman a mere machine. General A. Francis Walker says: "Manual training teaches accuracy, thoroughness, and develops character. It trains the eye, the hand, and the brain. There can be no cramming in a trade-school. What we read or hear may be forgotten, but not what we *do*."

A smattering of book-learning may breed conceit, but skill with tools cannot. It is the little knowledge that demoralizes. Professor Sweet says: "The workman is injured by scientific training when he thinks more of what he knows than of how to apply it." Some practical men are prejudiced against trade-schools. Because they got along without such aids, they think the boys of to-day can follow in their footsteps. In his address on "The Artist and the Artisan," Cardinal Wiseman showed how all the great painters and sculptors of the fifteenth century were truly artisans as well as artists. Michelangelo hewed his stupendous creations from the marble; Benvenuto Cellini forged and molded his superb silverwork; Titian alone knew the secret of mixing his match-

less colors; Raphael was a master of brush work. The prejudice against trade-schools formerly existed against law schools. The men who scoff at scientific instruction in a trade do not allow for changed conditions, or understand the difference between teaching a knowledge of scientific or mechanical principles and learning by practice. Most foremen or superintendents have not the time, inclination, or ability, to teach. They have learned to do many things, the processes of which they cannot explain.

A trade-school teaches the rudiments of practice. If it can be attached to the factory, as at Worcester, Mass., where the pupil can enter at once upon practical work, so much the better. At the Baldwin Locomotive Works, in Philadelphia, the pupils from the Spring Garden Institute are placed under a veteran workman. A boy with six months' training ranks as high as one who has had a year's shop practice. In the trade-schools in New York, Brooklyn, Philadelphia, and Chicago, are taught carpentry, bricklaying, plumbing, plastering, metal and sheet cornice-work, stone-cutting, fresco-painting, decorating, and electrical work. Most of the graduates earn good wages. A number are master-mechanics. Many of the pupils have worked in shops and seek to improve themselves in some special line. They make rapid progress because they know just what they want to learn.

The graduates from the English technical schools earn high wages. One young graduate received more than his father and two brothers together.

By the testimony of workmen themselves, increased skill and aptitude come from education, and the superior workman performs his work with less labor than his fellows. Manual skill also breeds self-respect. An English artisan may sit in parliament, but a man servant has no higher ambition than to keep a public house.

Few persons can study alone. They need the stimulus which comes from contact with other students, and also the guidance of a trained teacher. Manual training also needs special appliances and apparatus such as the ordinary shop or factory does not possess. Not every beginner becomes a skilled workman, but no more does every law student become a Marshall or an Evarts, or every clerk become a Stewart or an Astor. Many young mechanics have been benefited by taking the course at some Correspondence School, which has been most helpful in many ways, both to beginners and to older men.

A boy should not be repelled by the drudgery of a trade, or be afraid of soiling his fingers. The doctor, the lawyer, and the clergyman each have to perform disagreeable service, but they do not complain. To dress a wound, visit squalid homes, or defend criminals in court, is not pleasant work, yet it must be done by some one. A youth need not

waste a single hour in mere drudgery in mastering a trade, because he will gain benefit from every experience. Foreign workmen have generally better preparatory training than Americans, but they are less versatile. John Lafarge considers that a first-class American mechanic has no superior.

A boy who means to become a mechanic should not change from one trade to another. The shoemaker must stick to his last. As "Caleb Garth" says in "Middlemarch," "You must be sure of two things: You must love your work, and not always be looking over the edge of it, wanting your play to begin; and the other is: You must not be ashamed of your work and think it would be more honorable for you to be doing something else."

Every young mechanic should take a scientific or trade journal which contains the latest and best ideas about each trade. The isolated artisan in some factory, town, or village, who reads the trade journals, feels himself linked by sympathy and self-interest with his fellow-craftsmen. They supply a vehicle for discussion and for advancing knowledge in every department. That they are so widely read and quoted is a proof of their value.

In choosing a trade a preference should be given to a healthful occupation. Indoor work is not so wholesome as outdoor work. The bricklayer or mason lives longer than the mill hand. The man in the chemical factory is more exposed to disease than the machinist or the carpenter. The plumber has to work about sewers and drains, and must be careful. The cigar maker in the small shop is worse off than if in a factory with large rooms and plenty of windows. Working in constrained positions, as dressmakers, tailors, shoemakers, and others, do, cuts down the average length of life. Blacksmiths are very healthy, as are letter-carriers, whose exercise is the best and most natural that can be taken. Butchers do not live long, being poisoned by the exhalations of the slaughterhouses. Printers are short lived. Persons who work in high temperatures, as, for instance, bakers, cooks, smelters of ores, and operators in many parts of woolen mills, are apt to suffer from ill health. Lives of miners are less than the average length. Engineers in charge of boilers, who spend most of their time in cellars, are not as a class long lived.

The commercial world is over crowded and competition cuts down salaries to the lowest point. An ordinary clerk earns less than a first-class mechanic. He is less independent and has not as good prospects. An average clerk does not require special ability, but a mechanic must be intelligent, and, if he is industrious and observing, he improves daily. While machinery has thrown many workmen out of employment, immigration has displaced thousands of clerks. A mechanic with a kit of tools and enough money to hire a basement or a loft may start on his

own account, or he may work at home. If he has energy and friends, he will have little trouble in getting along. More mechanics than clerks own their homes. They get more enjoyment and comfort out of life, and they leave their families better provided for. The mechanic's social position compares favorably with that of the clerk. Even the much abused plumber is now a sanitary engineer, and the tinsmith is a man of standing, while many other callings have gained in dignity and independence.

Through building associations, all over the country, thousands of wage earners escape paying rent and are sure of a roof over their heads. Like Longfellow's "Village Blacksmith," "they look the whole world in the face, for they owe not any man." If a mechanic has any business faculty, he may start a shop for himself. Most of the heads of manufactories, and the majority of builders and contractors of the United States, have risen from the ranks. Mr. Carnegie's thirty partners in the steel industry began at the bottom of the ladder and won promotion by merit. There is an unlimited demand for capable foremen and superintendents in industrial establishments; men who are fitted for such positions usually find them.

Governor Pingree, of Michigan, began life cutting leather soles ten hours a day for four dollars a week. Judge W. McHugh, of the United States District Court of Nebraska, was a cobbler, and Judge Charles Daniels, of Buffalo, was a shoemaker in early life. Admiral Sampson was the son of a farm laborer, and his early life was full of hardship. Ezra Cornell, the founder of Cornell University, was the son of a New Jersey Quaker, and in his youth followed the pottery trade. Austin Corbin was a farmer's son, brought up to toil. He earned enough to pay for his own education, started in business in a small way, worked hard, and reaped the reward. The present Archbishop of Canterbury was left fatherless at the age of thirteen, and had to earn his own living at seventeen. He learned to plow as straight a furrow and to thresh as well as any man in the parish.

Frank S. Black, ex-governor of the state of New York, was a Maine farmer's son. He paid his way through Dartmouth College by teaching, came to New York at twenty-one, poor and unfriended, and rose from the position of reporter to be governor of the Empire State. John Wanamaker was the son of a bricklayer. President Schurman, of Cornell University, is the son of a carpenter. He worked his way through college by the scholarships which he won while a student. P. C. Sullivan, the son of a laborer, had only a common school education. He went West at twenty-four with no means, read law, became a foremost lawyer in the state of Washington, and at thirty-seven was Republican candidate for governor. Knute Nelson, a native of Norway, emigrated to the United States with his widowed mother, enlisted in the Union

army, and afterward became senator from Minnesota. Congressman James A. Tawney, son of a Pennsylvania blacksmith, worked as a machinist, studied law at twenty-seven, and was elected to Congress from Minnesota.

To conclude, the man who makes something always has an advantage over the dealer who buys and sells, or the professional man who gives advice. People must have clothes, shoes, furniture, and houses, and the services of the artisan will always be in demand. The field of invention offers boundless opportunities for the ingenious. New lands are being opened up and new industries developed. Therefore, the skilled handworkmen need have no fear of not finding steady and profitable employment. At present the most prominent field in mechanics is electricity, but the whole industrial world is open to young men of capacity and character.

THE EDUCATION OF THE MECHANIC

By JOHN PHINN
Author of "How to Become a Mechanic"

THE methods by which young men are trained to become mechanics have changed greatly within the past fifty years. Almost all our mechanics half a century ago were educated by what is known as the apprenticeship system, being regularly bound for a term of years to a master who, for a consideration, undertook to teach them the "art and mystery" of the trade which he himself practised. The consideration was of two kinds. That which most generally prevailed was simply an agreement on the part of the apprentice to work for very low wages during the entire years of his apprenticeship, in consideration of such instruction as would enable him to earn a good living when he was "out of his time." In this case it was the interest of the master to get all the work, and the most profitable work possible, out of the boy, while at the same time he was kept in such condition as would make him the least able to help himself and command good wages. The reason of this was, that if he became an expert workman while working for low wages, the temptation was strong to run away and get better pay elsewhere.

The evils of this system were so marked and so great that men of moderate means would not subject their sons to any such slavery, and

another system was brought into vogue — that of "premium" apprentices. These were the sons of men who had means sufficient to support their children while they were acquiring their mechanical education, and who preferred to pay for this education in money rather than in such labor as would prove a disadvantage to their children. They, therefore, paid what was known as a "premium"—a sum varying from $50 to $500, or even more, in cases where the establishment which the boy entered was famous. Such boys, instead of being allowed to find out everything for themselves, were taught by the master and his foreman, and the courts were properly very strict in enforcing the contract on both sides. Many a master has been forced to refund the premium and pay good round damages to boot, because he did not give his apprentice those opportunities to which the latter was entitled.

It did not require any very keen powers of observation to see that the apprentice system involved a great waste of time and energy, and it was long ago suggested that a much better plan would be to teach young men a trade in a thorough and scientific manner, just as they are taught to read and write.

When carried to an extreme, however, the system proves a failure, because it leaves out of consideration one of the most important elements of success — time. It takes time for the untrained muscles to acquire the power of guiding tools properly, and all the knowledge in the world will not make up for this. Therefore, any attempt to reduce the time required to learn a handicraft to the mere time required to impart a knowledge of that handicraft, will prove a failure.

But while knowledge alone will not make a good mechanic, it is very certain that no man can become a really good mechanic until he has learned a good deal more than is taught in our common schools. Therefore, the first thing to be done by the young man who seeks advancement is to acquire this advanced knowledge, and the question at once arises: In what does this special knowledge consist, and how shall it be attained?

"What shall I study?" and "How shall I go to work?" are the great questions which present themselves to the minds of young mechanics who desire to advance themselves in life. If a young man wishing to fit himself for the battle of life applies to one of what are called the more advanced classes, he will be given a long string of studies, prominent among which will be moral philosophy, history, geography, etc. If he adopt this advice, his time will be frittered away in useless effort, and he will never have such a perfect familiarity with the special subjects connected with his trade or profession as will enable him to attain a high position in his chosen department. This familiarity can be acquired only by concentrated effort devoted to a few studies.

The knowledge which the mechanic requires may be classified as follows, and as this arrangement helps to give clearer ideas of what the student should do, we shall give it in detail. His object is to acquire a knowledge of the properties of the materials which he is expected to use and mold into forms — the latter, however, generally coming first in the course of study.

The first idea which we entertain in regard to any object, is one of mere size and form, or, as the mathematicians say, quantity. Mathematics, therefore, lies at the foundation of all science, and should be taken up first. With one branch of mathematics — the science of numbers, or arithmetic, the student should be already familiar; but as we shall hereafter show, he should extend his knowledge greatly beyond the elementary rules taught in common schools.

The next department of mathematics that demands attention is plane geometry — the science of lines and surfaces. Upon this depends our knowledge of drawing, of surveying, and, indeed, of most elementary measurements, and if we include trigonometry, this branch carries us over most of the available ground this side of spherical trigonometry, solid geometry, algebra, and their applications.

Solid geometry goes a step higher, and while lines have length only, and while surfaces have length and breadth, solids have a third dimension added, which, of course, increases the intricacy of the subject.

Distinct from geometry, as involving a slightly different mode of thought, is algebra. Algebra is the bugbear of most young mechanics who shun its cabalistic hieroglyphics as if they were the symbols of necromancy. But algebra is absolutely essential in any sound course of study, as it enables us to arrive at an understanding of general laws and rules in cases where we would otherwise have a knowledge of mere isolated facts. Algebra, when applied to geometry and trigonometry, enables us to secure general results which could be attained by other means only with great difficulty, if at all; and when we apply our preceding knowledge to the more difficult branches of mechanics, we are forced to call to our aid the differential and integral calculus.

But besides mere quantity, matter has other properties, such as weight, color, hardness, etc., and upon these depend certain phenomena, which, when properly classified and their laws ascertained, give rise to the science of physics or natural philosophy, as it is more commonly called.

Natural philosophy divides itself into several branches, such as mechanics, or the relation of motion and pressure to mass; hydrostatics and hydraulics, which tell us of the properties of liquids; pneumatics, which treats of the mechanical properties of the air; electricity, magnetism, light, etc., which tell us of special manifestations of force, or modes of

action known by these names. A knowledge of all these departments of natural philosophy is essential to thoroughness in most trades, and, unfortunately, they are too often either slighted or neglected altogether.

But after we have fully examined the properties of quantity, weight, color, hardness, etc., we find that they do not fully explain many of the phenomena which daily come under our observation. We find that iron rusts, wood rots, and stones crumble and decay; and after these processes have gone on for some time, we find no visible trace of the iron, wood, or stone which was originally present. Each has apparently changed into something entirely different from the original substance, and on examination we find that bulk, color, and all other properties have changed, too. When these changes are investigated they reveal new facts and principles, which, when classified and arranged, give us the science of chemistry.

The three branches of science, then, are the key of all our knowledge of the physical world around us, until we reach that higher department where life comes into play, and the organic sciences of botany and zoölogy, and their subdivisions of anatomy, physiology, etc., are developed. But even these cannot be well understood without a knowledge of mathematics, natural philosophy, and chemistry; and as a general rule they are not essential to the education of the mechanic.

Many of the older colleges and universities, such as Columbia, Cornell, Yale, and several others, have added technical schools to their equipment, and some of them have provided workshops where the student may have an opportunity to learn the handicraft of various trades, and get experience in the use of almost every kind of tool. The result is that in almost every part of the country the means for acquiring a first-class technical education may be found. Consequently, those who have money and leisure at their command need find no difficulty in this matter.

But these pages are not intended for the guidance of those who are able to attend such schools. There are thousands of young men throughout the country who are eager for an industrial education, and yet can afford neither the time nor the money required for even the least exacting of these seminaries. What they need is technical schools which shall be open in the evening as well as in the daytime, and shall be so near their homes that attendance may not be impossible. Already we have a few such schools in this country, one of the most notable being the famous Cooper Union, of New York City. The Pratt Institute, of Brooklyn, also has evening classes, and in New York there is a trade school in which both day and evening classes are held and instruction is given in all the principal trades.

That the demand for these schools is extensive, was well shown by the number who desired to enter the Cooper Union when it was founded in 1859. Speaking on this subject recently, Mr. Abram S. Hewitt said: "I was present when the Cooper Union was opened in 1859. It had been announced that all who wished to enter the classes should give a week's notice. I was there to register them. The scene was beyond belief. There was a mob assembled so large and eager that the effort to register almost resulted in a riot. It was incredible that there should be such a passion for learning among the toilers. Every class was filled in one night, and from that day until the present hour there has never been a vacancy in the Cooper Union classes. We always have a waiting list."

But such schools are not numerous, and those that have been established are not accessible to thousands who are anxious to attend them.

When the young mechanic cannot find an opportunity to attend a scientific or technical school, undoubtedly the best institute is to be found in some one of the various "correspondence schools" which have been established in different parts of the country. These schools, when conducted by skilful and thoroughly educated teachers, are probably the best possible substitute for actual attendance on classes.

Another very efficient help in the acquisition of an elementary scientific education is to be found in what is known as the "University Extension" system. This is an organization which furnishes courses of lectures on scientific and literary subjects, the cost being fixed at a sum which merely covers expenses. As the lecturers are men of tried ability and well-known standing in their several departments, the student may feel confident that the information which they impart is accurate, and as complete as time and opportunity will allow.

But the young mechanic, who may be unable to secure access to any of these means of education, need not despair. Faithful and energetic work, even if carried on in solitude, and without any help other than that to be derived from books and such instruments as may be easily procured or made, will carry the earnest student a long way. Another thing that will greatly aid the young mechanic is to take one of the papers devoted to the special trade in which he is interested. There is now a special journal (sometimes several) devoted to the interests of almost every trade and profession. If you wish to find out what books upon your special subject are in the market, write to a few of the prominent publishers for their latest lists.

At the risk of descending to details, which some readers may consider almost puerile, we will offer a few hints in regard to study. Nothing can be done unless the student sets aside a certain regular time, with which nothing shall be allowed to interfere. The length of this time must, of course, be governed by circumstances, and we would caution

our readers against making it too long. Two hours is a very good length, though it is astonishing what can be done in an hour and a half, or even one hour, if this time be regularly occupied in earnest application. And now comes the question: From what portion of the day shall the study hour be taken — morning or evening? Much has been said in favor of the morning hours. There are some, however, and the writer is among the number, who cannot study intensely in the morning. Much, no doubt, depends upon habit, and we believe that most men might train themselves to perform good morning work.

To those whose work during the day is light, and who, consequently, are not physically tired when evening comes, the evening will probably be as good a time as any. But where the day labor, whether mental or bodily, is severe, or much in the open air, it will, in general, be found impossible to do good work in the evening. The obvious remedy for this is to change the study hour to the morning. Here, again, however, we meet a difficulty. It is the case that most brains do not work freely immediately after a night's sleep. To obviate this difficulty, take a little active exercise (ten minutes at least) in the open air. The body does not then act as a drag upon the mind, and the mental labor involved need have no effect upon the bodily labor required during the day. At least, the effect is not usually perceptible. Beware, however, of cutting short your necessary hours of sleep. If you get up at an early hour in the morning, you must go to bed all the earlier at night.

An important question here arises: How many different branches of study should the student attempt to carry on at once? While the answer to this must depend to a considerable extent upon the circumstances of each individual ease, the student will probably attain greater success by concentrating his efforts upon two or three departments than by undertaking a greater number. Let his daily task include not more than two studies at a time, and let the entire course be mapped out at the start. An hour and a half or two hours a day during two or three years, faithfully devoted to studies judiciously selected, will place the student in possession of more practically useful knowledge than is possessed by half the college graduates who enter upon business life.

A most efficient aid, both in overcoming difficulties and in retaining what has already been acquired, is a careful system of reviewing. Care must be taken, however, that the practice of reviewing does not produce injurious rather than beneficial results. If reviews are made at too frequent intervals, they may seriously impede the progress of the student, from the faet that they fritter away his time. If the student is carrying on two studies, as we have recommended, a review of one of these each month, thus giving two months' interval to the review of each study, would be right for a private student.

During the earlier stages of his studies, the student will feel the full force of the proverb: "It is the first step that costs." He will often flounder on without a clear appreciation of the actual value of the work he is doing; he may be unable to see that the studies which we specially recommend are of any direct use, and, consequently, they fail to interest him as they ought to do. This difficulty can only be met by the exercise of faith. Men who have trod the same path will all assure him that "in due time he will reap his reward if he faint not." In pursuing a course of study without a teacher, special difficulties will be met; but in regard to these, it is comforting to know that every difficulty which we surmount by our own unaided efforts does ten times more to send us forward on the road to success than hours of instruction from a teacher.

CHEMISTRY APPLIED TO THE USEFUL ARTS

By THOMAS B. STILLMAN
Professor of Analytical Chemistry, Stevens Institute of Technology

THE early history of chemistry reads like an Oriental tale. With rude implements and impure reagents great results were obtained and honors and distinctions won. An apothecary's clerk became the great Scheele; a medical student was made Baron Berzelius; the boy who walked to Paris developed into the mighty Dumas, famous as lecturer and cabinet minister; while Hoffman, once a poor student in Liebig's laboratory, discovered the aniline colors, and was called to fill the most important scientific office in the German empire.

Many great industries are dependent upon the knowledge of the chemist. The demand for trained chemists is greater than the supply, and is likely to remain so, owing to the rapid increase and extension of American industries and the growing respect among practical men for scientific methods. In almost every metallurgical establishment, trained analysts are a necessity. Pig iron, which was formerly made altogether by "rule of thumb," is now a chemical product; ores, flukes, and fuels must be analyzed, and, although only the larger establishments employ chemists steadily, this work draws largely upon the profession in all parts of the country.

In bleaching, in dyeing, and printing cloths, in the manufacture of soap, candles, and paints, in the extraction and refining of metals, in the manufacture of pharmaceutical preparations, in the making of soda-ash, acids, and fertilizers, and of various articles in household economy, chemical industry finds a wide application. The Pennsylvania railroad

has its laboratory and corps of chemists. The Agricultural Bureau at Washington, the United States Geological Survey, various state surveys, and numerous agricultural experiment stations are similarly equipped.

Such service was formerly performed chiefly by college professors, but the amount of work gradually became so great as to create a demand for chemists who could devote their entire time to the work. The quality of water used for domestic purposes, the availability of water for use in steam boilers, the characteristics of mineral waters, the adulteration of food, drink, and medicines, the detection of poison, the analysis of ores, with the best process for mixing and improving them, are but a few of the problems referred to analytical chemists.

The opportunities which a career in this science offers to young men are sure to increase with the increase of the nation in numbers and wealth. It is not enough that chemists have accomplished wonders up to the present time. They must do more. It should be significant of future triumph that they are now able to make artificial cocaine, indigo, and bitter oil of almonds, so true to the natural product that it is almost impossible to detect the difference. It is one of the aims of the chemists of this country to compound a varnish that will be durable and cheap in cost. Calico-printing is another industrial specialty that our chemists are studying. The printing-mill proprietors are often obliged to send to England for the services of competent men. There is no valid reason which occurs to me why American experts should not master this problem, as they have so many others. A young man of ability, who is willing to keep on experimenting and reducing theories to practical tests, has a grand field for his talents.

The opportunities for a young chemist are, on the whole, better today than they ever were. One who makes himself genuinely useful where he is employed may reasonably expect to be advanced to the position of superintendent or manager. In general, the post of chemist is the only stepping stone to practical metallurgy or chemical manufacture. Competent assayers speedily find practical mining open to them as a livelihood. The salary of an analyst in a manufacturing establishment is from one to two thousand dollars a year, often with the privilege of taking outside work. To these advantages may be added the opportunity for making inventions.

The discovery of a substitute for madder has caused the great areas of land required for the cultivation of that material to be put to other uses. An apparently trifling application of another chemical principle has enabled the salt manufacturers of New York state to compete with the world in producing salt for dairy purposes. Another application has made possible the making of steel in quantities formerly undreamed of;

and still another chemical invention is causing large investments of capital in making soda ash. In almost all other professions there comes between the instruction in college and the earning of a satisfactory income a period of practical apprenticeship, but in chemistry a graduate has been trained in exactly the kind of work he will be called upon to do in practical life, and, therefore, loses no time in experiments.

To become a good chemist one must have a taste for physical science. Problems are sure to present themselves which only the student with his heart in the work will have the patience or ability to solve. Delicacy and accuracy of manipulation are natural gifts to some men, but may generally be acquired by practice. At present every chemical analyst of note has been trained in an American or foreign scientific school. Assaying involves comparatively little scientific knowledge; but even in this field the well-trained chemist has great advantage, both in fertility of resource and in ability to extend his work over a wider field, over the man who has merely "picked up" his ideas of the subject.

Experts are becoming more and more serviceable to capital. Especially is this true in the examination and appraisal of mining, and in the determination of the value of chemical products, and the patents resulting therefrom. Capitalists make their investments practically on the advice of these trained experts, who, being thus in demand, are well paid. Many large fees are also paid by Boards of Health and the medical fraternity, or through them, for the reference of sanitary questions to chemists trained in the best processes.

As a preparation to a course in chemistry, a common school education is needed, together with a knowledge of higher mathematics, algebra, and geometry. The deeper and broader the foundation of general culture, the better.

THE CONTRACTOR AND BUILDER

THERE are several avenues to the control of a business of contracting and building. Many of our most successful contractors began as laborers in some one of the building trades. Others started in offices of contracting and building firms as office boys and clerks, and there acquired their first knowledge of the business features of contracting and building, and then, by inspecting work under way, and by reading, became familiar with the mechanical parts of the calling. Other contractors are graduates of technical schools and have had little or no experience in the business or trade details of the work. In most cases, the

technical school graduates have fathers or relatives in well-established businesses of contracting and building, and are thus able to step into positions of responsibility without undergoing the years of drudgery necessary on the part of those who are compelled, unaided, to forge their way to the front.

The business of contracting is divided into numerous specialties; for instance, there is the contracting mason, the contracting carpenter, plumber, decorator, electrician, and so on. In addition to these contractors, there is a large class of builders who contract for the entire structure, and sublet contracts to specialists. The builder must, of course, be a man of capital and commercial responsibility. He has generally reached his position as the result of careful work and steady progress in the mechanical field, usually extending over a period of many years. In the city, most of the builders have graduated from the trade of masonry, this being the most important special branch in the building of city houses. In the country, on the other hand, the builder in most cases was formerly a carpenter, the reason being that the woodwork in country buildings is the most essential feature of the work.

The business of building and contracting does not require for success any more than a common school education; in fact, some of the contractors who have established large businesses are very illiterate men, without sufficient scholastic knowledge to write a letter, yet they have strong common sense, good business ability, and a close familiarity with the building trades. They have had no difficulty in hiring young men and women, at comparatively small salaries, to supply their lack of educational proficiency. But learning is, of course, an advantage in any sphere of life, and the young man who is able to attend a trade-school acquires as much knowledge of the building trades in a year as the young mechanic can acquire in three years of practical work. The horizon of the former is broader than that of the latter, and on this account he is apt to be better able to build up and supervise a large building and contracting business.

The methods and customs in contract building have changed considerably in the last twenty-five, or even fifteen years. Competition is keener than formerly, and a contractor must have a larger capital. He must take contracts at lower sums of money and must therefore figure much closer upon the cost to himself. In the old days, when asked to give an estimate on a building, a contractor would say to himself: "This building is a good deal like the one I did last year for so and so, and I guess I can do this job for about the same price." This loose and slipshod guessing would soon put the builder and contractor of to-day upon the rocks. In making an estimate at the present time, he must know exactly how much lumber and how much stone and how much of other materials will be required for the building. He must be able to estimate

the exact cost of labor and of all of the great number and variety of accessories. An estimate is no longer a guess, it is a very careful mathematical computation. From this fact it will be seen that the contractor and builder must have a very accurate knowledge of material, labor, and the numerous other factors in the erection of a house. This knowledge can be acquired only by actual experience. Neither schools nor books will give it. A young man, therefore, cannot expect to begin as a contractor and builder. His best plan is to seek employment in the office of a well-established firm. Here, if he is bright and ambitious, he will be able to gain a great deal of information about the business of contracting and building. He will become a business man. Meanwhile, by reading, inspecting work and perhaps attending a trade-school, or by taking lessons through the medium of one of the corresponding schools, he will be able to combine with his business training the theoretical and practical knowledge of the building trades which is necessary for the equipment of the wholly competent contractor and builder.

It usually takes a long time for a man to get on his feet as a contractor and builder, but once he has established himself, he has a business that can be depended upon to yield him a good profit. There are fewer uncertainties and contingencies in building and contracting than in many other callings. The builder usually deals with men of means, and when work is finished he is more likely to receive his pay than is the case in other businesses; he is therefore able to steer clear of the rock which wrecks so many commercial enterprises, namely, an accumulation of bad debts.

Building and contracting contains but little of the speculative element. Of course, there is always the possibility of a strike that will render the builder unable to complete his work in the specified time. Much money has been lost in the past from this cause, but the builder of the present day almost always takes care that there is in his contract what is called a strike clause, releasing him from the time stipulation in case his employees are ordered out on strike.

On the whole, the business is a very good one. It is not so exalted as that of the architect, but, as a rule, it pays better. A young man of practical ability who makes up his mind to become a contractor and builder ought to be able to accomplish his purpose, and if he does he will have achieved independence, and, perhaps, will have acquired a fortune.

THE CITY CARPENTER AND THE COUNTRY CARPENTER

CARPENTRY of to-day might properly be classified as city, and country, carpentry. The tendency of the country carpenter is to grow broad in theories, while the city carpenter becomes a specialist, skilled in the use of fine tools and machines.

Twenty-five years ago when the construction of buildings was largely by hand, the framework was wood, and the girders and braces were measured, fitted, and placed, by hand. To-day, almost all of the pieces are manufactured in the mills; the only work that remains for the carpenter is to put the pieces together. Even this class of work has been superseded by structural iron. The real brain work and skill formerly demanded of the carpenter is supplied by the mill hands.

The revolution that the building trade has undergone, owing to the introduction of steel, has forced the carpenter into much narrower channels of work. Though such parts of a building as window sills and door casings are made in the factory, it is considered economy to employ the best workmen to place them in buildings. Of course, the men who devote themselves to this kind of work may have a general knowledge of carpentry, and may get, at the outset, higher wages than those engaged upon general work, but such work naturally precludes their branching out into broader fields.

The tendency of the country carpenter is to become a contractor, and an architect as well. He no longer confines himself to the building of houses on plans made by others. The sign, "John Smith, Architect," or "John Smith, Contractor & Builder" is now seen where simply "John Smith, Carpenter" used to hang. He is familiar with all kinds of work, but never becomes so skilful with tools as his city brother in trade. On the other hand, he may make more money, because of his many opportunities for going into business for himself, since a "start" in the country does not involve much capital, either in the fitting up of a shop or the obtaining of the material for a large contract. The fine artisan in the city is apt to become more or less a machine, while the rural workman learns something of estimating upon a job. It is a matter of fact that, while a great majority of the skilled workmen employed in the new buildings of the great cities are city born and bred, a still greater majority of the bosses and contractors of such buildings have learned the first part of their trade in the country.

It has been claimed by some that carpentry does not offer the inducements of a quarter of a century ago, but the fact that the trade schools are turning out many carpenters would seem to be a refutation of that theory. A disadvantage of the carpentry trade is that it cannot ordinarily be followed the year around. During the winter, little work is done on the buildings in the cities of the North; hence many thousands of good workmen are idle for a part of each year. This condition drives many from this trade into callings that afford a more certain and regular, if not a greater, stipend. This may be assigned as the reason why the ranks of this trade are not overcrowded, despite the large supply of new recruits furnished by the trade schools.

There is no doubt that the carpenter to-day is a better educated man than formerly. This is due chiefly to the trade schools, to the higher class of work now demanded, and to the general advancement of the status of the trade.

The boy who contemplates becoming a carpenter should have more or less of a mechanical "bent." He should first obtain just as good a school education as possible, and should especially apply himself to mathematics. A knowledge of geometry is essential, especially in stair-building, and if possessed of such knowledge he can easily outstrip competitors who are not so well equipped. After the lad has graduated from his village or grammar school he should, if possible, enter a trade school, where a complete knowledge of the use of tools may be acquired. In such schools the theory as well as the practice of carpentry is taught. Without such drilling, the young aspirant is severely handicapped. In trade schools are also taught the principles of architecture, which are invaluable to the builder. The course in the trade school is of about a year's duration. When graduated from the school, the young man enters upon a course of regular work in the employ of a contracting or boss carpenter, and soon, if he be diligent and ambitious, becomes a full-fledged journeyman carpenter, and later, perhaps, a contractor and builder.

THE DECLINE OF THE BLACKSMITH'S TRADE

A blacksmith was formerly a smith who worked in black metal or iron, as distinguished from the whitesmith, who worked in white metal or tin.— STANDARD DICTIONARY.

THE foregoing definition really casts little light upon the vocation of the blacksmith — the oldest, probably, of the constructive arts,— for the legend comes down to us from biblical times that at the completion of the temple, King Solomon gave a great feast to all who had been engaged in its erection, and as the story goes, disclosed to the artificers there assembled that they were all indebted to the blacksmith for the means to accomplish their several parts of the wonderful work. The smith it was who made the tools for the different craftsmen, and without him, it appears from the legend, they would have been nearly helpless.

Though ever an humble occupation, that of the blacksmith has yet been held in high esteem through all time, and the smith himself to-day, as in years gone by, is often a man of importance in his community. In rural districts, where he is seen at his best, he is often the recipient of such honors as the community is able to bestow, frequently being the justice of the peace. To the smith, more often than to any one else, are questions of moment referred, for he is considered to be, and usually is, a careful observer and a public-spirited citizen.

Of the qualities needed to make a successful blacksmith it is not easy to name the most essential. Shrewdness, carefulness, a general knowledge of mechanics, and an unlimited fund of patience, are prime requisites. While it is true that the country smith of to-day is not so very far removed from his brother of years ago, it is equally true that by reason of improved tools — many of them his own invention — he is enabled to accomplish much more in a given time, since all the improvements in tools and methods have had for their object the saving of labor. Where, for instance, fifty years ago a smith required hours to set the tires on a vehicle, he may to-day, by the use of the improved methods at his command, accomplish the same work in an almost incredibly short space of time. And in other particulars the gain has been equally great.

In some directions blacksmiths' work has within the last few years become specialized, as in the great shops of the more prominent commercial centers, where a smith, instead of having all sorts of smith work to do, has only a certain kind upon which he may be engaged from one year's end to the other. Two lines which may be mentioned are machine-smithing in the large machinery works, and tool-dressing in the mining or quarrying districts.

THE PLUMBING TRADE

By J. MADISON HEATHERTON
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IN THE United States at the present time it is estimated that fourteen thousand men are conducting the plumbing business. There are in the neighborhood of one hundred thousand journeymen plumbers and perhaps twenty-five thousand apprentices.

The present condition of the plumbing trade is not as desirable as most people seem to imagine. Apprentices have been turned out far too rapidly during the last fifteen to twenty years. This has become so thoroughly well known to the trade that measures have been agitated to counteract the evil, but there seems to be no remedy. It is a difficult matter to keep any one from learning a trade, yet there should be some plan devised to limit the number of apprentices in our trade.

A far better educated and well-informed grade of men than those who formerly conducted the business are now engaged in it. This is owing principally to organizations, trade papers, and trade-schools. Referring to organizations, it is a fact that the master-plumbers stand to-day as the greatest organized body of master-mechanics in the world, nearly ten thousand being members of a national association.

Not many years ago, before the present high-grade patented sanitary specialities were on the market, the plumber was forced to make all his own fixtures, with the exception of a very few articles. To-day this is changed. Solder is furnished, the plumbing fixtures are obtained for installation, and the plumbers' skill consists only in outlining the work, following the specifications, and setting up the various fixtures. It has been a prevalent idea in the public mind that the plumber has almost invariably overcharged for his work. This is absolutely untrue. We may take the plumbers as a class to-day and assert that their system of billing is generally on a carefully estimated percentage of profit over and above the cost price of the various goods which they use. Then so much per day is charged for the journeyman and the helper.

There are two classes of master-plumbers: the jobbing master-plumber and the contracting master-plumber. The jobbing master-plumber attends to nothing but overhauling old work and such repairing as he may be able to obtain. A great many of the jobbing master-plumbers handle estate work, and perhaps are paid so much a year by the various estates that they care for, or so much a day for the time of their journeymen.