

Among Men who Work with Hand or Brain

Stenography Road to Success for Men in Railroad Work.

By S. O. Dunn.

NO other business today offers as many and as great opportunities to young men as stenographers on the railroad business. This is true of all departments of the business; it is especially true of the traffic department.

Former stenographers are railroad presidents, vice presidents, general managers, traffic managers. None is not a high salaried, coveted position. Former stenographers are not filling out one or more roads. The number of them who will occupy such positions ten years hence will be much greater than it is now. The extensive use of shorthand and typewriting in railroad offices is a comparatively recent development. Since its introduction not only have numerous stenographers climbed up to high offices, but a much larger number have risen to subordinate but important places. These men are the general and executive officers of the future.

Career of Charles M. Hays.

Probably the career of no American railroad man better illustrates the opportunities of the stenographer in railway work than that of Charles M. Hays, vice president and general manager of the Grand Trunk and president of the Grand Trunk Pacific railways. Mr. Hays entered the railroad service twenty-three years ago as a clerk in the passenger department of the Atlantic and Pacific railroad at St. Louis. Perceiving the advantage of a knowledge of stenography would give him, he studied it and became secretary to the general manager of the Missouri Pacific. He must have thought promotion was slow in coming, for he held this position and that of secretary to the general manager of the Wabash, St. Louis, and Pacific nine years. Then his opportunity arrived and he was advanced so fast that within seven years he was vice president and general manager of the Wabash.

Mr. Hays was president of the Southern Pacific when E. H. Harriman acquired it in 1901. He speedily resigned because he felt Mr. Harriman was disposed too narrowly to restrict his freedom of action. As president of the Grand Trunk Pacific, which is being built from the Atlantic to the Pacific, this one time stenographer is in charge of the most gigantic piece of railway construction under way on the American continent.

Darius Miller's Steady Rise.

Darius Miller, first vice president of the Burlington, in charge of traffic, and a man who stands extremely close to that road owner, James J. Hill, was twenty-six years ago a stenographer in the general freight office of the Michigan Central. Mr. Miller rose steadily through the grades of the traffic service on various roads until his work as vice president of the Missouri, Kansas and Texas caused Mr. Hill eight years ago to make him vice president of the Great Northern. His transfer to his present important position followed three years later. Another of the Burlington's high officials who formerly was a stenographer is James M. Gruber, since Feb. 1, 1905, general manager of its line east of the Missouri river. Mr. Gruber entered the railroad service at St. Paul twenty-one years ago and did stenographic work for officials of various lines for five years. He then became chief clerk to the superintendent of the Gulf, Colorado and Santa Fe railway at Temple, Tex., since when he has climbed up fast through the various grades of the operating service.

Warren J. Lynch of N. Y. Central.

Warren J. Lynch, who at 40 years old is passenger traffic manager of fourteen of the New York Central's lines west of Buffalo, is a former stenographer whose rise in railway work within the last few years has been rapid. Ten years ago he had just been made assistant general passenger agent of the "Big Four." Mr. Lynch regards stenography as his "royal road to success" in railroad traffic work for the young man of energy.

and especially who has patience enough to wait for his opportunity to come.

"The stenographer stands a better chance of success in the railroad than in almost any other business," said Mr. Lynch the other day, "because it is so largely a business which is handled through agencies and by correspondence. A man can't learn the dry goods business by serving as a merchant's stenographer, because to be a successful merchant he must become a good judge of cloth and learn how to buy and sell it, but the man who writes letters for a railroad official speedily gets an insight into his chief's duties. Railroad work must all be a matter of record. When a railroad official wishes to ask a question of any importance, either of his superior or of a subordinate, he writes him a letter, even though he be near the door and he gets written replies. The stenographer sees these letters, and thus day after day he is learning how the business is carried on.

Under the Eyes of the Boss.

"The railway stenographer generally has the advantage over most railway clerks of constantly being under the eye of at least one official who is able to judge of his merits and to push him along if he deserves it. He also is when he learns quickly when a desirable position becomes vacant, and can put in his application for it early and set his friends to working in his behalf.

"The presence of so many girl stenographers in commercial work tends to make it difficult to get and keep capable and ambitious young men in railway stenographic work. A man is apt to get disgusted with his job when he sees a girl doing the same sort of work, and perhaps doing it just as well as or better than he. But there is the great difference between the girl commercial stenographer and the man railway stenographer that she has little or no prospect of ever being anything but a stenographer, while he, if he has ability and energy, is pretty sure to rise to a good position and stands a chance of becoming one of the big railway officials of the country."

J. A. Middleton, vice president in charge of traffic of the Lehigh Valley, got his start as stenographer. So did L. F. Gos, vice president and general manager of the Los Angeles, San Pedro and Salt Lake railroad. Mr. Middleton's career has been peculiar in that he rose almost to the top of the traffic service before he entered the operating department. Before accepting his present position he was vice president and general manager of the Minneapolis and St. Louis and Iowa Central lines.

Good Pay from the Start.

It is known that railway employees in all departments are well paid as compared with persons in other lines of business doing work requiring an equal amount of energy and ability. Men stenographers are usually started in railroad service at \$15 per week to \$25 per month. Good work secures speedy recognition. Many stenographers as general officers get from \$150 to \$300 per month. Promotion to a chief clerkship, which is pretty sure to come sooner or later if ability is shown, means a salary of from \$200 to \$300 per month; and having once become a chief clerk a man is in line for advancement to positions in which the salary paid is limited only by the capacity exhibited and the revenue secured.

It cannot be too strongly insisted, however, that the stenographer in railway work can reasonably hope to rise to high positions only if he studies the railroad business assiduously and applies himself to his duties energetically and constantly. In railroad work the race is to the swift and the battle to the strong. In no other business does the law of the survival of the fittest operate more inexorably. It is because the fittest do survive and climb up to the highest positions that American railroads have been built up and managed with a genius that has commanded the admiration of the world.



Learn Knack in Using Tools; Makes Your Work Easier.

By Jonas Howard.

LOOK at that young fellow killing himself over that casting," said the foreman. He pointed to a young man who was smoothing away the seam on a gray iron casting with a heavy rasp file. The casting was fastened securely in a vise, and the young man's arms ached, set jaw, and wet forehead showed how he was exerting himself. It was a hard casting and the seam wore away slowly.

"Now, that man is quite sure that he has got an awful hard job," continued the foreman. "He is new to shop work, and he is almost ready to give it up as a bad job, too. He's pretty sure right, also, for the way he's working at that bench is enough to make a man sick of things. He goes home every night tired to death, and he's getting to hate his work cordially. And he'll continue to do the same until he gets the knack of doing it in the right way—the way that makes light work of it—like the fellow at the fourth bench."

Whistling as He Worked.

The fellow at the fourth bench was doing the same kind of work as the man first alluded to, but he was holding his head up high and whistling merrily as he worked. His casting was just as hard, his file as heavy, but so easily did he draw and push his rasp to and fro over the seam that had it not been for the gray shavings that came off with each movement, it would have been difficult to believe that he was exerting any pressure on his tool. But he was actually working faster than the other man; where the other completed three pieces, this man turned out five. The only difference was that he had "the knack of doing it."

The difference in their methods was startling, considering the narrow scope for accuracy to manifest itself in such work. The new man gripped his file as if he wished to bury the steel in his palm; his arms were flexed, the muscles swelling with their tension, and the blood ran up and down quivering under the strain put on them. For he depended entirely upon the strength of his arms to do the work; he was putting all the energy in them, and in them alone, upon that file.

The old man, the skilled workman, gripped his file loosely, scarcely closing his fingers upon it. He used his grip merely to steady it against the seam. His arms swung freely, almost loosely, back and forth. None of his muscles were greatly exerted. He simply leaned the weight of his body on the file, swinging it to and fro with a light body motion that was the merest play to him, and he was quite sure that his job was a "cinch," provided you had the "knack of doing it."

Must Use Brains.

"Some get the knack in a hurry," said the foreman. "The bright, snappy fellows are on to it within a few days. The fellow who doesn't use his eyes and his brains sometimes never gets it until you take an kick into him. There is a big difference in the way men work, a mighty big difference. And surely there is. It is not only in the case of the man with the file, although it is possible that one may search far and earnestly without finding a better illustration of the value of "the knack." All of the trades afford opportunities for seeing just how much it is worth a man to know how to do his work. While in many trades the work

Wonders of the Telephone; Plenty of Room in Work.

By Frederick G. Fossett.

EVERY American schoolboy knows that there is plenty of room at the top. He also hears much about the rungs in the ladder of success. When he grows older, however, and reaches the point in his career at which he must decide which particular professional or business ladder to climb, he is told about overcrowding and the limited opportunities for the ambitious young man in professional and mercantile life. Then he begins to be more concerned about his prospect of getting a foothold somewhere near the bottom than he is about the vacant spaces at the top. But there is another and more cheerful aspect of the situation, for while it may be true that some of the older ladders are overcrowded, new ones frequently are raised.

This is the age of the specialist, and every profession now offers to the young man a choice of ladders. Not all the engineers, for instance, follow the same path in their endeavors to reach the top. Alexander Graham Bell invented the telephone a little over thirty years ago; immediately a new ladder was raised, and those who have climbed it are doing some of the most important scientific work of the day. They are developing an invention useful to all classes of people, and are dealing with some of the most fascinating problems known to the industrial scientist.

Rare Opportunities in Business.

Even in their student days the young men who propose to make telephony their life work find rare opportunities for observing how success is planned and won. Years ago Samuel Pierpont Langley, the distinguished American scientist, devised the bolometer, an instrument for determining the degree of heat in the rays of a star millions of miles from the earth. The telephone engineers have recently perfected apparatus for measuring the telephone current, and to do this it was necessary to create a device as delicate as the bolometer. It will interest the young man entering upon the study of the sciences to know that a large part of the work which resulted in the making of the bolometer, the instrument which measures the telephone current, was performed by students in the scientific department of Harvard university, who worked in cooperation with members of the engineering force of the American Telephone and Telegraph company.

Inventions Still Being Made.

For many years the minute telephone current had been playing hide and seek with the men who sought to bring it under the control of the ordinary methods of measuring electrical energy could be applied to this attenuated force, but the engineers with the assistance of the Harvard students, finally solved the difficulty, and now the strength of the electrical impulse in the longest telephone line can be accurately determined. To explain fully how this is done would require a long and technical description. A single sentence, however, will serve to give an idea of the delicacy of the task set for the young men at Harvard. The electrical energy in the receiver of a telephone at the end of a line 1,000 miles long is just about one-five-millionth part of the electrical energy which causes a sixteen candle power incandescent lamp to glow. Or, turning the statement around, we may say that the electrical energy in the light by which we see, perhaps, this article is read would suffice to carry sound over 5,000,000 telephone lines.

1,200 Wires in One Cable.

In the larger cities telephone messages travel under the streets instead of flying along wires suspended from poles. The cables used in underground telephone construction consist of many wires twisted together and inclosed in lead pipes, technically known as cable sheaths. When the engineers of the Bell system first made use of telephone cables the number of wires which could be inclosed in one of the pipes was less than 100. Now as many as 1,200 wires sometimes are placed in a single cable, 2½ inches in diameter. This means that 1,200 people may be carrying on conversation at the same time through one of the cables and the messages fly back and forth without interfering with one another.

When cables first were manufactured insulation was secured by packing the wires in paraffin. Then the wires were covered with cloth and finally paper wrappings were substituted for the cloth. The paper itself is not the only insulating medium; the dry air in the folds and substance of the wrappings plays its part in keeping the words flowing along the proper channels, and as the air must be perfectly dry the cable at all times must be hermetically sealed. One process of its manufacture is that of baking the cable being placed in a large oven heated until every vestige of moisture is driven from among the wires.

Manipulation of Currents Problem.

Recently the engineers have been doing wonderful things with loading coils, devices which are intended to lengthen the distance over which transmission through cables is possible. A loading coil consists of an iron ring, which looks like a doughnut, well done and overgrown. Around this ring are wound about fifteen miles of fine iron wire, and in the making of these telephonic doughnuts the determination of the amount of the fine wire to be used and the manner in which the coils should be connected with the cables have required long and patient study and much experimenting on the part of the engineers. Loading coils are so costly that they can be used only where telephone traffic is greatly congested. The fact that they were unknown a few years ago is an illustration of the manner in which the engineers constantly are meeting new problems.

The manipulation of electrical currents almost ten minutes to be measured as only a small part of the work of the telephone engineers. Their work at times is similar to that of the men who planned the great railroads which span the continent.

Telephones in All Regions.

It is a popular idea that telephone lines are to be found only in thickly settled portions of the country. As a matter of fact, the glistering strands of copper over which flow never-ending currents of speech are found in the desert and in the wilderness, far from the habitations of men. So the young telephone engineer is likely to be called upon to assist in the best mode of suspending wires across a chasm hundreds

of yards in breadth and perhaps a thousand feet in depth, or he may be asked to design a line to run along the face of a cliff. In western mountain regions such lines have been built in places where it is necessary to incline the poles outward, and the linesmen climbing to the crossarms find themselves many hundred feet above the jagged rocks at the bottom of the precipices.

Unexpected Circumstances Frequent.

This new occupation, which has won a prominent place during the last thirty years, differs from many of the older professions in that the men who follow it constantly are confronted with unexpected demands. The engineers who build railroads, who plan mines and tunnels, and who dam the waters of rivers and streams, while they must do each piece of work according to its peculiar requirements, nevertheless proceed along fixed and general lines. But the telephone engineers, being engaged in a business which did not exist a generation ago, frequently are meeting problems which are entirely new, involving which past experience gives little guidance.

Take the telephone instrument itself. Most of us are familiar with only two kinds of the useful appliance, that which is fastened to the wall and that which stands on desk or table, but of the making of the telephone there is no end, and it similarly may be said that there is no end to the varieties of telephones which the engineers must create. The old time, ditty beginning "Down in a coal mine, underneath the ground," were it popular today, might be revised to include a reference to the telephone lines.

Coal Mines Make Trouble.

Why there should be any difficulty in putting telephones in coal mines is at first a puzzle to the man not in the telephone business, but the engineers have found the creation of apparatus for use by the miners a troublesome task. Water constantly drips in the galleries of the mines and in some cases large quantities of sulphur are mixed with the coal. The water and the sulphur combine to form sulphuric acid, which soon destroys ordinary telephone apparatus, and so the engineers have spent much time in designing telephones which the miners will find satisfactory. And the mine telephony is one of a great number of special patterns which seldom are seen by the general public.

Railroad managers are adopting a type of telephone instrument which makes it possible to talk over the telephone wire from any point along the railroad tracks. Nowadays when a train stops between stations because the engine has broken down, or because the engineer has discovered a landslide, or because the snow is so deep that the locomotive cannot push its way through the drifts, it is not necessary to send a brakeman plodding for many weary miles, perhaps through the darkness and storm, to the nearest telegraph station.

Phone Over Telegraph Wires.

Instead, the brakeman gets from the baggage car a telephone and a half box. With the pole, wire, joined together, he hooks the telephone wire, the hook in this case being fastened to the pole instead of to the free end of the line. From the hook a wire runs to the box and another wire, extending from the box, is clamped to the nearest rail. Then the conductor, by pressing a button, is able to talk from where he stands to any telephone station on the line of the road. The apparatus which he uses enables him to telephone over the telegraph wires without interfering with the telegraphic messages going over those wires at the same time.

Then there are the switchboards, each a combination of thousands of parts, which do their work speedily and harmoniously, because during thirty years engineers have studied and worked, patiently correcting minor defects and sometimes absolutely discarding one type to replace it with a better. At first they made rude and simple appliances for joining line to line. Now they plan switchboards in each of which are thousands of miles of wire and millions of parts, and from which radiate wires leading directly to 10,000 telephones.

Always Room for Study.

Telephone engineers do not devote all their energy to the creation of new kinds of apparatus. In the offices of the telephone companies you may see great charts covered with lines and figures. These are the score cards in the race which the telephone people are running against time. Year in and year out the engineers are studying means of saving a fraction of a second in the time required to answer the call of a subscriber. For the guidance of the engineering force, frequent tests are made in the central offices all over the country, and the results of these tests, when plotted on charts, comprise the data from which the engineers determine how to increase the efficiency of the service.

Curious Possibilities Are Many.

Some curious possibilities of telephony have been demonstrated by the engineers. Prof. Bell, for instance, was the first man to give a practical demonstration of the fact that almost any substance can be made to repeat sounds. He showed that the ravings from a black silk gown, the carbonized hairs of the puppy of the fields, or any one of a great number of other substances, if placed in a glass bulb and subjected to variations in a ray of light thrown upon the bulb, would talk. The man who seizes to climb the telephone ladder will find that it leads to positions of usefulness and he will have the satisfaction of knowing that he is playing some part, even if it is a small one, in the development of the utility which is in daily use by millions of his fellow citizens. There are now over 2,000,000 subscribers to the service of the Bell companies and the number constantly is increasing, while there is a smaller number of patrons of the independent companies scattered throughout the country. The Bell engineers are looking forward to the time when there will be in the United States one telephone to every five people. If half these telephones are in dwelling houses there will be one in the home of every other family, and growth such as this means abundance of opportunity for the young man to enter the fascinating occupation. So, for a great many years to come, there will be plenty of room for the student in the telephone office.

Rich Man's Son Works Hard in a Small Country Town.

By W. E. Murc Jr.

IN a city of about 2,000 inhabitants nearly every one knows something of every other person's affairs and especially do people try to learn what is going on among the influential people of the community. The "gossipers" take most delight in spreading anything that is done by them.

These conditions existing, the son of a rich man finds that there are many things that he would like to do, but must refrain from, and that there are many things that he does that he would rather not do. Most men who are successful or well to do in a small town are interested in one or more business enterprises that need close attention, and besides having to look after these matters they own land that has to be rented, kept in repairs, etc.

With all these matters to look after, the father wants his boy to learn his business affairs and the handling of the farm lands from "A to Z," so begins by placing the boy when young as a clerk, and as the son develops and becomes more capable he is given a better and better chance, until he becomes competent in every detail of the clerical end of the business and has fairly good judgment in regard to its management.

Must Learn Many Businesses.

Then his father thinks it would be well for him to learn something of his other interests, and has him begin at the bottom and go through the different branches of each business until he has acquired the knowledge his father wishes. During the time he has been working in town he has learned much concerning how his father handles his landed interests, and by frequently going to the farms with his father he sees what is needed and how to accomplish it.

After the business training he has had, then it is for him to determine what vocation he cares to follow and upon deciding his father finds a place for him there. Often during the year and especially during the summer he finds himself filling the places of different persons, when they are away on their vacation, and it also rests upon

Work for Your Work; Don't Work for Money.

By Jean S. Jaeger.

IN California, in Washington, D. C., in New Jersey, and in many other parts of the United States there are men working today in a fashion to set the best of examples for the thousands of other men that are toiling in other parts.

Burbank, the wizard of fruits, vegetables, and flowers; Edison, the wizard of electricity; Wiley, the wizard of the food supply; and many more are preferring the job to the wages. They are doing better work than any of their rivals who incline to the wages rather than to the work. They are setting an example not only in industry but in the best feeling to the hundreds of thousands of other workers who are continually under the temptation to work for the clock or for the boss or for any of the many side attractions that are not the job itself.

The real worker that gets ahead today is the worker who gives all his time, attention, and energy to the job, not because of what he expects to find in the pay envelope but because of what he hopes to bring out of the job. There is no job, however lowly and seemingly thankless, that cannot be immeasurably improved if the improver goes at it in the right way. He cannot improve it a great deal by working at it with the idea only of getting pay in mind. He cannot improve either the job or himself by gauging the value of the job by the amount of attention he can attract by holding it.

Grow with Your Job.

If he is wise he will not let the job get better than he is, but he will grow up with it and make it grow with him, and he and the job will both improve so much that more money and better treatment will both come to him as a matter of course. But he sometimes must be wise enough to sacrifice the immediate for the remote. Burbank not many years ago was offered a

yearly salary commensurate with his needs, but the acceptance of that salary would have necessarily debarred him from making many scientific experiments upon which he had set his heart. He sent back the offer. The spirit that animated him in doing this was the same that moved a famous scientist once to declare that he had no time in which to make money.

There are to be found many examples of workers who have obtained their ideals so faithfully that they have not permitted themselves for money or for power to interfere with them. Such a man is Bishop Spalding of Peoria, to whom Abbe Kiehl paid such high tribute in his book, "The Land of the Strenuous Life." He declared that in the United States he had met President Roosevelt, Bishop Spalding, and other thinkers whose ideas are working in the mass of latter day thought and are luring men away from the sordid idea that the only thing worth striving for is money.

American Worker is Favored.

The visitors from France and many other travelers who have come to this country and have studied it intelligently say the worker of today in the United States is the most fortunate worker in the world. He has to pay a great deal to live, but the means of living is easier to get, and as soon as he finds that he cannot live by bread alone he gets forward much faster. The ideal should be part of each worker's equipment. It should lead him away from the temptation to place the dollar above everything else. It is difficult to make men see this, unless they see at the same time concrete examples of the good that men have been able to achieve while ignoring the demand of the dollar to listen to the demand of good workmanship.

There are plenty of these examples, and they occur instantly to those who are familiar with those successful lives that have been lived without the accompaniment of the cash register.