Electricity Does the Work in the Big Packing Houses he moved his office to the Grand Central ticket department of the road ever since, hotel, where the Paxton hotel now stands. giving up the work of taking and sending the then went with the Western Union messages.

troduction of an original invention, imme- necessary even in a stoker. diately follow such tremendous strides in tique before it wears out."

an afternoon looking over the machinery of the South Omaha plant, to the engine room centrally located among the numerthe shining pistons, and all working so propulsion. perfectly that not a spurt of steam clouded From Armour's plant the party went to sionally the engineers turned valves to the same. In the beller room the comwhich wrings the native heat out of the fires were all clear and the steam regular, mailed shoulders of Hercules, and the tasks they wrought through the length and of that fabled hero a thousand times.

"Swift's and Cudahy make use of electricity for lighting purposes only. This engine, as you see, is directly connected with a 1,300 K. W., 250 volt generator. The terson informed the party that electricity new engine we are laying on that central was used only for lighting purposes and solid cement base is an 800 horse-power the apparatus was in no way dissimilar to direct-connected with a 560 K. W. generator, It is designed to carry our night load. During the time we are installing we borrow power from the Omaha Packing company for night service, that we may not have to fire to the capacity of the big engine. The engine we are taking out is far from useless. I wish I had it installed in some thriving town of 5,000 or 6,000 out in the

"With this engine we move every separ-There are above 4,000 incandescent lamps of electric transmission can be reduced to in daily use. We are gradually changing a mathematical certainty. Transmission of from the alternating current to the direct, energy by steam pipes or compressed air three-wire system as a more satisfactory is likely to be hazardous and doubtful in with a lower voltage in that way. With the net work of wires distributed through the plant, a low voltage is especially desired. The class of workmen on the killing floors and in fact the ignorant ones in all departments are intensely afraid of an electric shock. They don't like to work around machines of high voltage. dampness of the plants makes an added element of danger also, as short circuits are easy where conduction is good. The high voltage of the arc machines is enough to do great damage, misdirected. This class of lighting, I presume, will decline in packing circles in favor of the low voltage transmitters of the incandescent generators. Gradually we are exchanging the alternating machines for the direct. The generators when removed in good repair are often reversed and used as motors to give them an added span of utility. They are not quite so compact and economical as the machine designed especially for a motor. but we can use them like the darkey's coon trap to catch 'em comin' and goin.'

"Beside the lighting apparatus, eightyseven motors are distributed through the plant, varying in capacity from 5 to 150 horse-power. The 150 motor is in the beef killing department, and performs all the lifting and driving work from the time the animal is knocked until it glides into the cooler. Sixteen of our motors drive elevators of an average capacity of 4,000 pounds each. We have one high power first four years after he had begun to as motor to run a compressed air machine. We use the compressed sir in several departments, especially for pressing meats into boxes, lifting ice out of the tanks in a telegraph key when 12 years of age, learnthe ice room, and in other departments ing the business in the office of President where electric motion is an advantage.

cutting rooms which can not well be done mastering the business Mr. Tetard decided by hand clevers and saws are operated by to follow the famous mandate of Beecher motors. The presses of the lard, eleo and and "go west" and in May, 1882, he landed stearine room are similarly operated. All in Omaha and immediately secured employthe machinery of the mechanics, steam fit- ment with the Western Union, which was ters, plumbers, carpenters, boiler makers, then under the management of L. M. box factory, cutting, nailing and cooperage, have their peculiar motor at hand.

partment are operated from this room." said Mr. Vaughn, turning to the panels of the trains of that road for some time he the switchboard with its multitude of lev- changed to the Burlington, working in the ers and dials. "Each panel here controls telegraph office at the Burlington heada department. We have telephone con- quarters and in a short time joined forces nection to advise of the requirements. These dials keep a record of the power which concern he has been ever since expended; we can tell from their examination exactly what each department is telegraphers of Omaha. He is now and has doing in the expenditure of power without been for some years contracting freight seeing the floors where the work is per- agent of the Burlington railroad and is formed. Plans have been submitted for a daily seen on the streets of Omaha. He new 17-panel switchboard to replace this says he learned how to send a message at one of six. The need is the result of the age of 13 in a railroad office in Wisgrowth. The only precaution between hav- consin and in 1868 he secured the position ing the control of motors so far from the of testing operator on the only line bemachines they operate is the emergency tween Chicago and the coast, being given switch near the machine which the oper- his position by J. J. Dickey, formerly superator can throw in case of accident to stop intendent of the Western Union at Omaha, the motor instantly. Where the use is fre- but at that time chief clerk in the Chicago quent or constant the motors are in per- office. When the Rock Island was built petual motion and the operator connects from Des Moines to Council Bluffs, the with the motor by throwing in his clutch. through wire to the coast was moved to the

"As to the economy, I figure the use of motors a factor representing a saving of spector of lines Mr. Hayes was in charge one-third. This is especially apparent in of fifty miles of wire between Boone and the driving of the ninety-seven large pumps Lewis and made the trip as often as posused in the plant. The use of electricity sible with a horse and buggy. He stayed permits the concentration of power into with the Western Union until the road had large units like this big engine; and the reached Atlantic and was then made train losses of distribution avoided. One engine dispatcher between Des Moines and Davenis always more economical than two of port. In 1870 Mr. Hayes went with the half the capacity; easily understood from Union Pacific and was stationed at Bryan. a slight knowledge of friction, condensa- Utah, and afterwards at North Platte. In tion, and complexity of parts.

bollers, two 500 horsepower, four 600-horse- for the Union Pacific with C. B. Havens as power, and four of 450-horsepower. The day dispatcher. At that time there were draft for these numerous furnaces is furn- three trains a day between Omaha and ished by the largest stack in the west. It North Platte. stands 25 feet from the surface line of Hayes went with Harry Deuel as assistant

the times; to keep up-to-date in ten feet at the top. These fires are at matters of economy and labor- present hand-stoked, but it is apparent that saving, is nowhere more apparent the great scarcity of this class of labor than in the large packing houses will soon drive us to use the automatic of the city. In this field the master me- feeders and car-unloaders. I have been chanic of the institution for which he with the company fifteen years, and I labors finds a task which occupies all his think I am safe in saying that it has not energies. In the words of Tom Vaughn of been its principle to adopt machinery the Armour & Co. plant, "It takes about purely to save labor, but the grade of labor all the time I have aside from the hours of is inadequate. I have as many here, necessary sleep. We have to keep abreast pointing to the turmoil of swarthy, blackof the times or be laid on the shelf. Not ened, fire-bronzed faces in the pits, "as only must we be familiar with each new can well work without treading on one anmachine or appliance; but, from the in- other, but the lack individual intelligence

"Before you go I want to show you somethe matter of improvements that we must thing not strictly electrical. It is our steam exercise caution and alertness that our turbine pump. Now, here is a compact purchases be not out of date by the time little machine. This little shaft, threethey are installed. To do the very best fourths of an inch in diameter, whirled by we can, our machinery is many times an- the rush of steam through the turbine in this little box, a foot in diameter, at a of his interrogators, who were spending 1,000,000 gallons of water to the top of this building every day.

"Everyone looked up to feel the spray from the condensers, high above, falling on ous buildings which accommedate various their faces. For compactness and power departments. For a few minutes the roar the little engine was a slight revelation of of the five great engines, and the bustle of the approaching economies of the new class the mechanics who were installing a new machinery quite abreast of the strides in 800-horsepower engine was bewildering. The the field of vehicle locomotion. When sucparty gazed at the revolving master cessfully applied to electrical apparatus the whoels and the unlimited plunge, plunge of turbine may outstrip the best in piston

the high recesses of the airy hall. Others the new plant of the Omaha Packing comclimbed up the brass runged ladders with pany, which also makes use of electric shining cups in their hands, and occas- transmission. Conditions were practically after the steam supply. Boon from the pany is getting a new tier of boilers ready general survey, the attention of the party for operation. The economy of automatic engines were found to supply the force, parent. There was no sign of bustle. The great buildings like water from a satur- A glance at the big stack showed no unated towel. Enormous pipes covered with consumed carbon going to waste. Pale a marble coat of frost, covering a large blue, almost white, smoke whirled up and area back of the compressors, gave evi- floated lazily from the top, while all the dence of this battle with the natural ele- other stacks in the city rolled out dense ments of sunlight. The similarity of these clouds of black smoke heavy with waste engines, representing as they do a cooling carbon from uneven drafts. These botlers capacity of 1,400 tons of ice daily, soon supply an 850 horsepower engine with direct lessened the interest at first attracted, and connected dynamos. There are two generthe party turned to the great whispering ators, one of 250 kilo watts (230 volts) and dynamo and the 1,800-horsepower Hamilton the other 150 kilo watts, with the same Corliss engine which revolved its coils. On voltage. The lighting consists of 1,650 ineither side the pistons, hidden beneath candescent lamps and twenty-five are great shields of metal, heaved like the lights. The various departments are managed by a seven-panel switchboard. In the beef-killing rooms are two motors, one of breadth of the plant, multiplied the labors fifty and one of twenty-five horsepower. Distributed through the plant are fifty "Our plant and that of the Omaha Pack- smaller motors, applied to all classes of ing company use electricity exclusively as machinery which are operated in the plant. a motive power," said Mr. Vaughan. The work accomplished is exactly similar in all respects to that done in the first point visited.

At Swift and Company's plant Mr. Patthe generators in use at the other plants. The dynamo for producing the light in the 2,400 incandescent lamps and the thirty-six arc lights is belt connected with the machinery propelling their system of transmission. "We use," said Mr. Patterson, "what is known as rope or belt transmission. I think it a decided economy in a compact plant, where the distribution can be effected without too much friction of ate machine or device in the entire plant. In a widely distributed plant the economy complicated and distant parts. Of course, any large plant. After careful consideration we have adopted the rope transmission. Strong cables pass from the engine room to the various departments and there connect with shafting from which belts are passed to the particular machines used in each instance.

At Cudahy's, also, rope transmission is used in preference to electrical transmission. Aside from the 2,200 incandescent lamps and thirty or more arcs, electricity is confined to ventilation fans. All of the South Omaha plants have their own light generators, and all are seeking alike the low voltage machines and the preference is growing toward the direct rather than the alternating currents. The introduction of new machinery is never ending and it is the duty of the master mechanic to figure to a nicety whether the outlay for a more up-to-date machine will warrant the displacement of a machine which will still do years of work at a fixed expense, or not. Rigid but scientific economy is the principle which must determine all changes.

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Old-Time Telegraphers

(Continued from Page Three.)

sume man's size. John Tetard, general manager of the Nehraska Fuel company, started to work

C. G. Simmons of the Northwest Telegraph "All of the cutting devices of the mest company in Wisconsin. After thoroughly Rheem. Mr. Tetard stayed with the Western Union for six years, when he was made "The electrical appliances in every de- train dispatcher of the Chicago, St. Paul, Minneapolis & Omaha road. After running with the Nebraska Fuel company, with

Robert C. Hayes is one of the old time so familiar a term in the days of the au- right-of-way of that line and Mr. Hayes worked at the end of the line while it was being built to Council Bluffs. While inthe fall of that year he was moved to "Now to drive this enginery we have ten Omaha and made night train dispatcher

Desiring a change Mr.

again and was transferred to Chicago, after the fire. His various posts were after- of being the oldest resident in point of service of the Western Union to assume Chester and afterwards went to Hebron, In 1893 he came to Omaha to take the posttion of contracting agent of the Burlington and has been chasing loaded box cars ever

Friends of Allen B. Smith, the genial assistant general freight agent of the Buriington, may be surprised to learn that Mr. Smith was once a pounder of the live keys. He learned the experien a mere boy on the Hannibal & St. Joe road before the present form of key was used, when the messages came through and an impression was made on paper. During the war Mr. Smith was an operator at Beverly Junction, and in 1870 was agent and operator Mr. Vaughn led the way for the party rate of 19,000 turns per minute, lifts about at Sabetha, Kan. In 1871 he was agent and operator at Highland, Kan.; in 1872 at White Cloud, in 1873 at Falls City, which was the last work he did with the key. Although Mr. Smith has his messages brought to him by the basket full in the morning and during the day, he is still able to read or send and delights in sitting by an instrument and hearing the messages as they flash across the wire.

George West, general agent of the passenger department of the Chicago & Northand sounder. He learned the Morse code

ticket agent of the Burlington, when the Marshalltown. In 1884 Mr. West was prooffice was located at Ninth and Farnam moted to be day operator and ticket clerk streets, where the M. E. Smith building is at Des Moines and was then made ticket now located and was with Mr Deuel when agent at Cedar Rapids and has been in the

To Frank Lehmer belongs the distinction

wards at Cincinnati, Buffalo, St. Louis, service in the local offices in Omaha, for Kansas City and Omaha. A week before Mr. Lehmer was the first messenger boy the big strike in 1881 Mr. Hayes left the to carry telegrams in Omaha, which was his occupation here in 1860. At that time the position of agent of the Burlington at he devoted his spare moments to learning the art of handling the keys and reading the sounder until 1861 he was sent as assistant operator at old Fort Kearny in 1861. He then held the position of second ploneer operator on the Pacific telegraph line as it was being built across the country until Cottonwood Springs was reached. The pioneer telegrapher went ahead and opened a station on the frontier and Mr. Lehmer would follow and take the station after it was opened. He kept this up until in 1862 he was stationed for several months at Horse Shoe creek, thirty-seven miles west of Fort Laramie. Late in 1863 Mr. Lehmer joined the military telegraph corps in the south under Colonel Clowry. returned to Omaha and worked in the Omaha office until 1866, when he was made manager of the office, which position he held from 1866 to 1877, when he guit the business to enter the commercial field. Mr. Lehmer is now general manager of the Omaha Ice and Cold Storage company. Charles Ware has risen from the ranks

until now he holds the title of superintendent of the Nebraska division of the Union Pacific road. He attended school at the Southern Illinois university at Carwestern road, with headquarters at Omaha, bondale, Ill., and when he reached his began to earn his first money at the key majority he entered the railway service with the Northwestern as telegraph oper in a railroad office in 1881 with the ator, trick dispatcher and chief dispatcher P. & C. and the Grand Trunk railroad. Since 1890 he has been with the Union About the time Garfield was shot Mr. West Pacific as trick dispatcher, chief dispatcher moved west to Peorla and was with the and assistant superintendent until April, I. B. & W. road for one year as operator 1906, when he was made superintendent of fell to detail. Four of the great units, or feeders and grates was there at once ap- and bill clerk. In 1883 he went with the the Nebraska division of the Union Northwestern road as night operator at Pacific, which position he now holds,

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