

MUELLER *Record*

OCTOBER • 1956



Recording Our Thoughts

L. A. TEASDALE, manager, heating and lighting, Yale University, New Haven, Conn., writes in regard to the Aug-

ust MUELLER RECORD cover: "Most important point to me is that the Chief has allowed his parking time to run out! And he has no ticket!"

*Our
Cover*



The Montana Power Company provides water service for the City of Missoula. Here is the wood stave pipeline that brings water to the Garden City in Western Montana. The terrain is typical of that of much of the area.

Mr. Teasdale is referring to the picture taken in Colorado Springs which showed a Mueller 3-Way Hydrant beside a parking meter with the fire chief's car parked in the space. It was explained that such parking is legal in Colorado Springs providing the space is by an alley or intersection.

In defense of the Chief, we later learned the car was driven by a member of his staff . . . and the picture was taken before the driver left the car to "feed" the meter. He had just driven into the spot when the unusual scene was noticed by the MUELLER RECORD editor.

SPEAKING OF HYDRANTS, we have it on dog-gone good authority that the Passaic Valley Water Commission in Clifton, N. J., has about 50 surplus hydrants which are being sold for \$10.00 each. Orders reportedly are coming in



October • 1956

WALTER H. DYER, Editor

MUELLER CO.

MANUFACTURERS OF WATER AND GAS
DISTRIBUTION AND SERVICE PRODUCTS

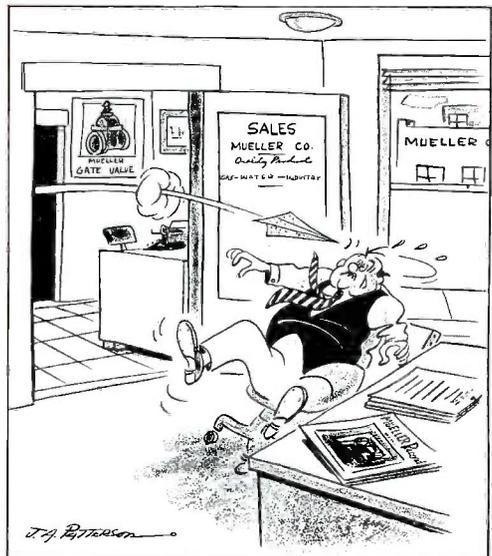
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"Boss, here's a copy of that air mail letter you wanted in a hurry."



TWO MEMBERS of Mueller Co.'s sales organization were treated to some excellent Canadian hospitality recently. Shown with the mayor of Granby, Quebec, the Honorable P. Horace Boivin, left, are LeRoy J. Evans, Mueller Vice President in charge of Eastern Sales, and James Williamson, Mueller sales representative.

fast from in and around the community.

And who are the buyers? Dog owners, of course.

CANADIAN HOSPITALITY is the finest in the world, according to two members of Mueller Co.'s sales organization who were invited to take part in a municipal convention representing our Northern neighbor.

Of course, these men, LeRoy J. Evans, Mueller Vice President in Charge of Eastern Sales, and Jim Williamson, Mueller sales representative, already were familiar with Canadian courtesies, having become acquainted with many of that country's officials through our subsidiary, Mueller Limited, in Sarnia, Ontario.

Yet it took a convention, the Union des Municipalities de la Province de Quebec, to forever cement their favorable opinion of these fine people.

"We were attending the New England Water Works meeting in Bretton Woods,

N. H.," Mr. Evans said, "when we learned the Canadian group was at the same hotel, the Mt. Washington. Thinking that some of our people might be there, I inquired, and discovered that only city officials were represented among the 800 guests attending.

"We were invited to join their festivities and a splendid time was had by all," he said.

Mr. Evans and Mr. Williamson entered into the spirit of Canadian entertainment and donned suitable "costumes" provided by their hosts.

An old villager had been offered two dollars if he would let the artist paint him. He hesitated for awhile.

"It's easy money," prompted the artist.

"Sure, yer right," was the reply; "I was jes' thinkin' as how I'd git the paint off afterwards."

Professor (rapping on desk during class): "Order!"

Student: "Beer."



ABOVE, The Johnson Flying Service hangar. Below, two Ford tri-motor planes, the type used to drop 70 feet of water mains by parachute high in the Montana mountains.

*In Missoula, Mont.,
it used to be tough job
carrying pipe
12 miles up mountain*

IN THIS AGE of finding new and more practical methods for doing a job, it seemed inevitable that the West would eventually replace the slow but dependable pack horse.

Yet who could realize that the Rocky Mountain version of Old Dobbin would be permanently released to pasture—not by a jeep, nor car, nor any ground vehicle—but by an airplane!

Humiliating for Dobbin in a way, yes, for this air pack horse is not a jet, but rather the Ford Motor Company's now ancient 1929 model Tri-Motor plane.

This strange twist of fate which is rendering the pack horse useless was the result of the forward thinking of a man named Bob Johnson who owns and operates the Johnson Flying Service near Missoula, Montana.

Mr. Johnson learned his flying in an old World War I plane. He has never served in the Air Force, and that branch of our defenses lost the services of one of the bravest and brainiest men in the business.

"We'll fly a plane any place," this now graying pilot says. And his record proves just that. His company has been awarded a citation from the United States Forestry Service on behalf of the people of the Pacific Northwest for his uncanny rescue work in all kinds of weather. Seven months of the year in some areas, Johnson's planes are on skis.

Three years ago, he proved to the water works industry in Montana that there are more ways than one to climb a mountain.

Many cities in this area reach out many miles to gather in their water sup-

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HERE SHE COMES! Top photo shows the Ford tri-motor plane with a crew of five move into position. The 10 feet of 12-inch main weighing about 250 pounds is dropped from the plane over a 100-foot target in the second picture. Below left, down she comes. The chute is opening but cannot be seen here. At center and only a few feet from the ground, the chute opens. Gliding safely to the ground is the main at right. A Montana Power Company spokesman described the flight as "a fly buzzing around in a teacup."



They Drop Water Mains By Parachute



Water Main by Parachute . . .

(Continued from Page 4)

ply. Usually it is necessary to go high into the mountains where annual runoffs are piped from reservoirs into the city's distribution system.

Such a city is Missoula whose water department operations are explained elsewhere in this issue. Missoula's usual source of supply, Rattlesnake Creek, won't support the city during the summer, so the company has developed eight lakes in the mountains as storage reservoirs.

Dams on the lakes range in height from 12 to 16 feet and are built of dirt fill reinforced with rock cribs. The dams and lakes require maintenance which is done annually in the late fall—and winter comes early in the mountains.

Access to the area is by 12 miles of steep mountain trail, but the company has found a shorter way—through the air.

Previously, pack animals were used to supply the maintenance crew for its annual stay of from four to six weeks and to haul in equipment. When there was heavy equipment to be hauled in, a real problem was posed.

The Montana Power Company, which supplies Missoula with water, gas and electricity, tried an experiment. Seventy feet of 12-inch pipe, with couplings and a valve, were needed. The Johnson Flying Service was asked to try dropping the material, which weighed a total of about 2,500 pounds, by parachute.

The pipe was cut into 10-foot lengths, the 415-pound valve taken apart and crated and the couplings put into sacks, each piece of cargo weighing about 250 pounds. A Johnson Flying Service Ford Tri-Motor with a crew of five did the job. Here's how a Montana Power Company man described it:

"The location of this particular job was in an area which made flying a very difficult and hazardous undertaking. The size of the area where the drop had to be made was about 100 feet square, which looks mighty small from a plane. The pilot had the minimum amount of space to maneuver his plane, due to the closeness of the cliffs and mountains. It

reminded me of a fly buzzing around in a teacup. All in all, he certainly did a beautiful job of flying. You can imagine what a tremendous job that would have been with pack horses."

Other flights were made to drop food to the workmen. Montana Power Company men said the day of the pack horse is passing, and in another few years "you won't be able to hire one."

Dropping pipe is old stuff to the Johnson Service. They have dropped portable saw mills in a 50-foot circle for the Forestry Service several times, and it isn't unusual to find them dropping such fragile items as eggs.

"The secret is split-second timing," Johnson says, whose pilots also spray crops and timber.

In the company's 32 years existence, Johnson has had contracts to spray more than 2,000,000 acres of timber. Already this year, he has sprayed more than a quarter million acres. For this type work, he uses a DC3 and a DC2 model plane.

And what about the pack horse which Johnson has literally run out of business?

"Heck, if they have anyplace to go, I'll be glad to drop them off," he says.

George F. Sullivan, Former Salesman, Dies

GEORGE F. SULLIVAN, a Mueller Co. sales representative for 27 years, died September 28 in the St. Camellia Hospital at Milwaukee, Wisconsin, after a long illness. He was 84 years old and had been a patient at the hospital the past four and one-half years.

For many years, Mr. Sullivan travelled the State of Wisconsin and a section in northern Michigan for Mueller Co. He was well known in the water and gas industries.

Surviving is a sister, Miss Sarah Sullivan, who lives at the St. Mary's Convent in Milwaukee.

"Why don't you get a good brush? You could do twice as much work."

Painter: "Well, sir, I ain't hankerin' for twice as much work to do."

In Missoula where nature lends a hand, they boast the . . .

BEST WATER IN M o n t a n a

(EDITOR'S NOTE: The MUELLER RECORD is grateful to the DAILY MISSOULIAN and to Water Superintendent Ralph (Red) Cronin for this story on water supply for the City of Missoula, Montana. Much of the information here appeared in a special Sunday issue of the Missoulian. Other facts were provided in a written report by Mr. Cronin.)

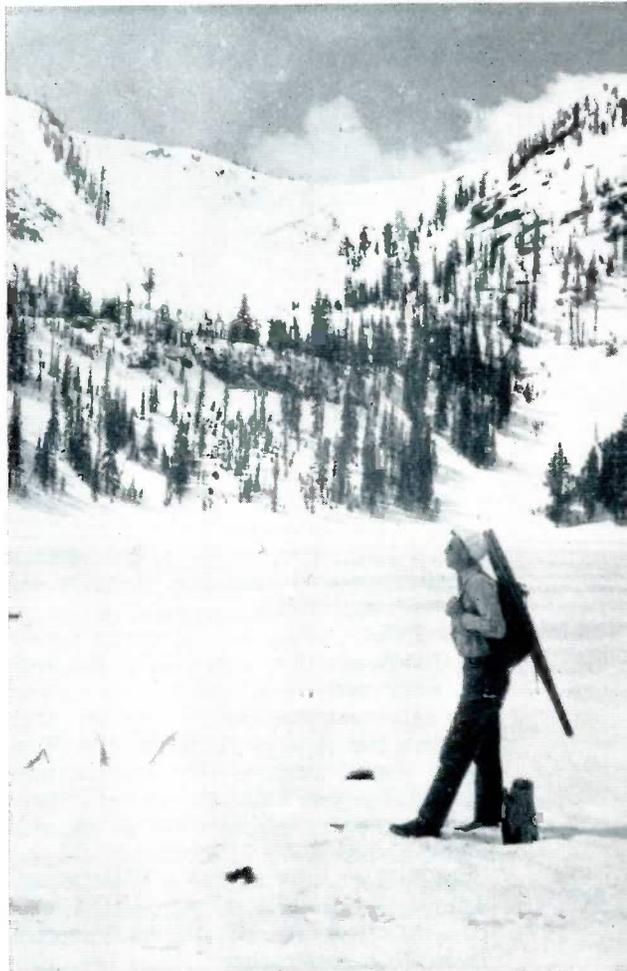
JUST ABOUT THE best in Montana and some of the best in the nation . . . that's the way residents of Missoula, Montana, feel about their abundant water supply.

The State Board of Health requires most Montana cities to add four chemical purifiers in considerable quantities to their water supply. In Missoula, only chlorine and ammonia are added, in small quantities, and tests often indicate that "raw" water meets rigid health requirements. Chlorine and ammonia are added, nonetheless, because the law requires that even "pure" water be treated.

Missoula residents apparently like their water because in past years they have consumed more than any other city in Montana including the state's three larger cities—Great Falls, Billings and Butte.

Great Falls, the state's largest city with a population of about 40,000 uses about 20,000,000 gallons daily at the peak of summer use, while Missoula with just 28,000 residents has a record of more than 27,000,000 gallons in a single day.

The Montana Power Company which



NOT MANY WATER men in the United States include this sort of work in their duties of operating a water department. On these snowshoe or ski ventures, Missoula water men must inspect their mountain lakes to release water into Rattlesnake Creek, the city's source of supply.



RALPH (RED) CRONIN, superintendent of the Missoula, Montana, Water Department.

supplies Missoula with water, gas and electricity, says the per capita rate is high because of the water's cheapness and the lack of regulation on its use. Another factor is the rocky subsoil in most of the valley which soaks up the water used for irrigating lawns and gardens. Residential consumers are on a flat monthly rate, plus an annual charge for sprinkling based on the area of grass and number of trees.

Records show that the earliest Missoula residents in the 1860s drew their water from the river or Rattlesnake Creek. It's told that the first "water system" was a donkey cart operated by two Indian boys, one of them known as One-Eyed Riley. They filled the tank on their cart from a ditch which ran from Rattlesnake Creek to turn the flour mill on the river bank where the Montana Power Company substation now stands. The two Indians then went about the community selling water to the residents.

In 1871 or 1872 Frank L. Worden, co-founder of the city, began construction of a water works. Water was diverted from Rattlesnake Creek about 2½ miles north of the city, then carried in a covered flume about one foot square to a small covered reservoir on Reservoir Hill at a Point on the ridge about half way from the foot of the hill to the present reservoir.

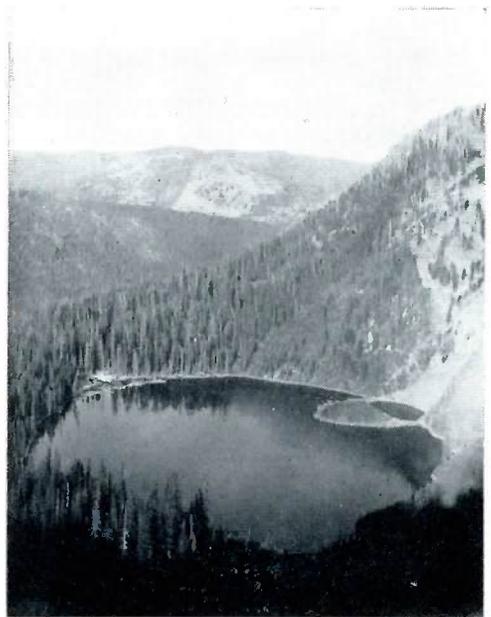
The reservoir was about eight feet long, five or six feet wide and about six feet deep. From the reservoir to the town the system consisted of pine logs 12 feet in length and a foot in diameter through which 2 inch holes were bored lengthwise with an auger operated by power from a treadmill driven by two horses. The logs were connected by short iron pipes driven into the auger holes.

Installed about the town were a dozen hydrants consisting of faucet taps protected from the weather by small roof-like structures.

The first reservoir was used until about 1900. It was with great difficulty that the flume from the intake was kept from freezing.

The mill ditch reportedly never froze, and this was used when the other water wasn't running. It was still being used in the fall of 1888, when there was an epidemic of typhoid fever.

None of the original water pipes is still in use, although some present mains have been carrying water for half a century. The company is constantly replacing the older mains, some of them made of wood.



THIS BEAUTIFUL SCENE, taken from atop a Montana mountain, shows one of eight lakes utilized as reservoirs for the Missoula, Montana, water system.

Montana Power company officials noted that some 50-year-old wood mains have been found to be in almost perfect condition due to the chemistry of the soil in this area. "Because of this, wooden mains are as good or better than metal ones, but the wooden pipes have a poor public acceptance. People think wooden mains are old-fashioned and out of date, so we're replacing them with metal as fast as we can," officials say.

The Montana Power Company bought the water system, along with the electric system, the street railway and the heating system, from the Missoula Light & Water Company in 1930.

It took a few years for the new owners to locate and establish accurate records on all the water mains. Since then, records and maps have been kept up as improvements have been made. More than seven miles of mains have been added in the past 10 years.

The water system, which serves all of the city, and adjacent areas, begins in the mountains to the north, making it a gravity system as compared to a pumping system such as at Great Falls, where water is taken from the Missouri River.

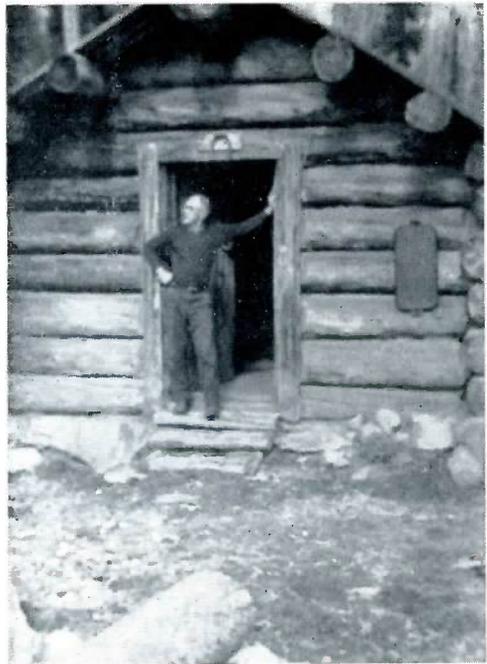
The Rattlesnake drainage basin covers an area of about 80 square miles, most of it behind the ridge and highest peak—Mt. Stuart—north of the city. The average elevation of the drainage is about 7,000 feet as compared with the 3,200 foot elevation of Missoula.

Snow depths during the winter range from 10 to 15 feet. Heavy timber in the area makes the runoff slow, providing water in the summer when the demand is greatest.

"If forest fires were to wipe out these timber stands," a company official said, "the supply of water from the mountains would certainly be diminished, which would be a tragedy for the people of Missoula."

The company owns practically all the private land in the upper Rattlesnake Valley—about 23,000 acres. This was purchased to insure an uncontaminated water supply for the city.

The upper valley is closed to the public during the summer to protect the watershed from possible contamination. The area is fenced where necessary for protection against livestock, and the



SUPERINTENDENT CRONIN stands in front of the Missoula Water Department's mountain cabin where water men spend a month a year checking the system.

fences are patrolled constantly by the company. The only road into the area, built by the company, is closed with a locked gate except during the hunting seasons.

The flow of Rattlesnake Creek during the summer wouldn't support Missoula's voracious appetite for water, so the company has developed eight lakes in the mountains as storage reservoirs.

Water from the lakes is discharged into Rattlesnake Creek, the amount turned loose depending upon the demand. In the winter time water in the creek sometimes freezes so as to restrict the flow and company men must make the trip to the lakes to open the gates on one of the lakes. This is a snow shoe or ski venture, often with a blizzard to make things worse.

Ralph (Red) Cronin, superintendent of the water department, recalled an April trip begun under blue skies, with perfect weather promised. Once in the back country, an unexpected snow storm descended and Cronin and his two companions took shelter in one of the cabins

SOIL CHEMISTRY allows wooden mains to last many years in Montana. Here, workmen construct a wood stave pipeline to bring water to Missoula.



the company maintains near the lakes.

The storm continued, and the men found that vandals had opened the canned food kept at the cabin, except for a pound of coffee. The storm continued for three days, and the three had nothing but black coffee.

When they built a fire in the cabin, swarms of large black flies appeared. The men took to opening the door periodically and squadrons of flies would rush for the light, dropping in the snow when they hit the cold air.

On the fourth day the storm abated enough for the three to try the trip back to civilization. Atop Stuart Peak they passed a party going in after them. Both parties shortly picked up the trail of the other. Cronin insisted he wasn't hungry when they finally got home.

Three or four trips are made to the lakes in the summer as more water is needed.

From the lakes high in the mountains, the water flows in Rattlesnake Creek to a point $3\frac{1}{2}$ miles north of Missoula, where the intake reservoir is located. The dam, built in 1901, provides a settling basin and reservoir of 3,000,000 gallons capacity.

The company goes in for landscaping, and the grounds around the intake dam form a beauty spot which the public is invited to visit. The Montana Power Park, a 60 acre tract located a quarter mile down stream from the intake dam

was developed by the company after it had purchased most of the land in the watershed above the intake. This picnic ground was created and is maintained to guard against possible contamination in the upper water shed.

The park has roads, picnic tables, fireplaces, drinking water and other facilities available to the public free of charge. The company employs a caretaker there during the summer months.

Joseph Stone, caretaker at the intake dam, had quite a few words to say about his job.

"The fellow who had this job before me said it would take about three years to get the hang of it, and he was right. The first two autumns I had a terrible time with leaves on the screens of the intake pipes. I had to clean them every couple of hours.

"Then I developed a simple method of skimming the leaves off of the surface ahead of the screens and flushing them over the crest of the dam.

"One of the many duties during the summer months is keeping a protective eye on the many youngsters who fish in the creek below the dam. This section of the creek is reserved by the Fish and Game people for "small fry" only and is a fine recreation spot for Missoula young folks. The Game Commission has closed the entire water shed above the intake dam for fishing and this is avail-

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Aurora, Colo., once a tiny Denver suburb, is confidently

Pointing to 100,000

IMAGINE FOR A moment, if you will, a complacent village standing without growth for half a century. Now picture this village as it reacts to a sudden transformation into a fast moving, industrial and military center.

What do you think would happen, for instance, to the water system in a town that experienced a population increase of 227 percent in ten years? And to keep matters interesting for city officials and the water department, the census count goes up an additional 327 percent in the next five years.

You might expect such growth to slow to a walk after sixteen years. But not in Aurora, Colorado. This one-time tiny suburb of Denver, which had but 3,437

residents in 1940—just a few more than were around in 1900—now has 38,000 inhabitants, considerable industry and military installations, plus an optimistic viewpoint among its citizenry for planning toward what they feel is not too distant day when Aurora will be a city of 100,000 people.

The reason for Aurora's sudden awakening is not unlike that of many other cities in the past that have roused as a sleeping giant and thrust themselves upon the national scene. Aurora's colorful history may be dated to 1891, but its real growth did not begin until 1940. The World War II years, the post-war

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PARIS GUY, former water superintendent who spearheaded the rapid growth of the Aurora, Colorado, Water Department following that city's decision to build its own system in 1953, is at left. Below, Aurora's new municipal building which houses the fire department, and all city offices.



Denver's Senior Tapper

*Alva C. Powers has used
Mueller B machines 42 years*

YOU HAVE TO admire a man who hasn't been late to work for 42 years, and who, in fact, has been reporting an hour early each day through those years so that he may take care of early customer calls.

What sort of man is this, you ask, and what has he gained for this added effort?

The unusual thing about Alva C. Powers, senior tapper for the Denver, Colorado Board of Water Commissioners, is that he hasn't tried to gain any-



YOU CAN'T SAY too much in favor of Alva C. Powers, says Mr. Powers' supervisor, William L. Irwin, shown above. Mr. Irwin is supervisor of the services and meter divisions for the Denver Water Board.

thing other than the respect of his employers and fellow employees, but most important, to receive the personal satisfaction derived from a job well done.

We might add that he also has gained a reputation for being the best tapper in Denver. "He's an outstanding worker," says W. L. Irwin, supervisor of the services and meter divisions, who in addition to other duties is in charge of all tappers. Mr. Irwin has been with the Denver Water Board for nearly 33 years and knows Mr. Powers pretty well.

"He's on the job everyday at 7 a.m., although he isn't due at work until 8 o'clock," Mr. Irwin said. "Alva comes early so he can take care of the plumbing contractors who call at that hour seeking information needed for each days work. He contributes more to his job and the Denver Water Board than we could ever require him to do," Mr. Irwin says. "You just can't praise this man enough."

As senior tapper, Mr. Powers has a crew of seven men, and here again he demonstrates the fine person that he is. With 42 years service under his belt, and now that he is 62 years old, you might think he would assign his men to handle all tapping jobs. Not so with Alva C. Powers. He's on the job everyday right with his men.

"I only average ten taps a day now," he said almost apologetically. "But when I was a little younger, I once averaged 32 taps a day for four consecutive months."

Mr. Powers, who has played professional baseball as a catcher, pitcher and first baseman, started with the Denver Water Board on April 14, 1914, as a tapper and general service trouble shooter. His career, a colorful one, was interrupted two years during World War I service in the Navy.

"My first transportation was on a bicycle and I carried my equipment in the bike's basket," he recalls. "In those days, I was under the supervision of H. C. Malony, who retired after 57 years with the Denver Water Board.

Mr. Powers remembers that it wasn't too many years until he was promoted to the use of an "auto car," a two-cylinder coupe. Next came the Model-T coupe, which he drove for ten years, and covered 140,000 miles.



ALVA C. POWERS, senior tapper for the Denver Water Board, has used the Mueller B Machine and Mueller corporation stops throughout his 42-year career, "and never has found defective workmanship in a single stop or machine." Here, he displays the special box he built to carry his tapping equipment in the trunk of his car.

"I got a Model-A when they came out," he said, "and drove that one seven or eight years covering another 130,000 miles.

The present car assigned to him is a 1947 Chevrolet which already has 80,000 miles, "and she'll get a lot more before I'm through with her," he says.

As a tapper, Mr. Powers probably is as much of an expert as any man in the country. It is estimated that he has made nearly 60,000 taps. He's a great backer of Mueller equipment, for which we are gratefully proud.

"As long as I've been in this game," he said, "I've never had a Mueller tapping machine or a Mueller corporation stop give trouble because of defective workmanship."

Mr. Powers is now using his fourth Mueller tapping machine of his career. The current one has been in service for 11 years and still is as good as new,

according to Mr. Powers. "They get to see a lot of service in a city like Denver," he says. "Like I said before, I still do about ten taps a day, sometimes more than that."

Denver's senior tapper lives at 2925 Yates Street. He has four children, three daughters and a son. He's especially proud of his son, and has a right to be.

"That boy already is a foreman for a large plumbing contractor in Denver," he says. Before coming to the Board of Water Commissioners, Mr. Powers was a licensed plumber in Denver. He was one of the best lead men in the area and is still called on to practice his art of joint wiping occasionally.

Mr. Powers hopes that someday he can take a vacation and come to Decatur to see how Mueller Co. makes "those good corporation stops and tapping machines."

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EVERETT McNUTT, who became Englewood Water Superintendent following Joe McCall's resignation to join a Denver manufacturer, served as Assistant Superintendent throughout the long struggle to acquire a water department. At right is Harold H. Babcock, Englewood City Engineer.

Time of Transition

Englewood, Colo., achieves water system in just 4 years

HERE IS THE story of a medium size city that made a complete transition in its water service in just four years. It's the story of Englewood, Colorado, which for the first fifty years of its existence was completely dependent upon the City of Denver for water and sewer service.

Until World War II, this arrangement proved to be an excellent one. In the early 1940's, however, and those immediately following the close of the war, Englewood began to grow rapidly, and soon found that they sorely needed their own water system.

Once this town learned that it would have to divorce itself from its big brother, it went about the task in as efficient a manner as possible. It achieved complete independence from the Denver wa-

ter system during the year 1948-52. During this same period, the population grew from 18,000 to 26,000.

The rapid growth of the entire Denver area was placing considerable strain on the Denver Water Board in properly serving city residents as well as suburban areas. Several measures were taken by Denver to alleviate the situation. Included was the eventual establishment of the Denver Blue Line and a proposed increase in water rates. The Denver Blue Line is a geographic boundary past which water service could not be expanded until more water became available from Transmountain Diversion Work.

Actually, Englewood launched its civic-minded move for a water system some four years prior to the establish-

ment of the Denver Blue Line. In 1948, the drive began with the election of Charles R. Allen as mayor. Former Mayor Allen is generally credited as the man who got the move underway. He campaigned on an "Englewood" ticket, was against annexation and very strongly for a water system. These two points in his platform won over Democrats and Republicans alike, and he was elected by a 4 to 1 majority.

Mayor Allen reasoned that Englewood's continued growth was a healthy situation and should no be thwarted. By 1948, the city had reached 16,000, and several industries had shown an interest in locating plants in Englewood. The new city government took their first step toward that goal by getting a two and one-half million dollar bond issue approved by the voters. Construction on the plant began in 1949 at a time when the population was 18,000.

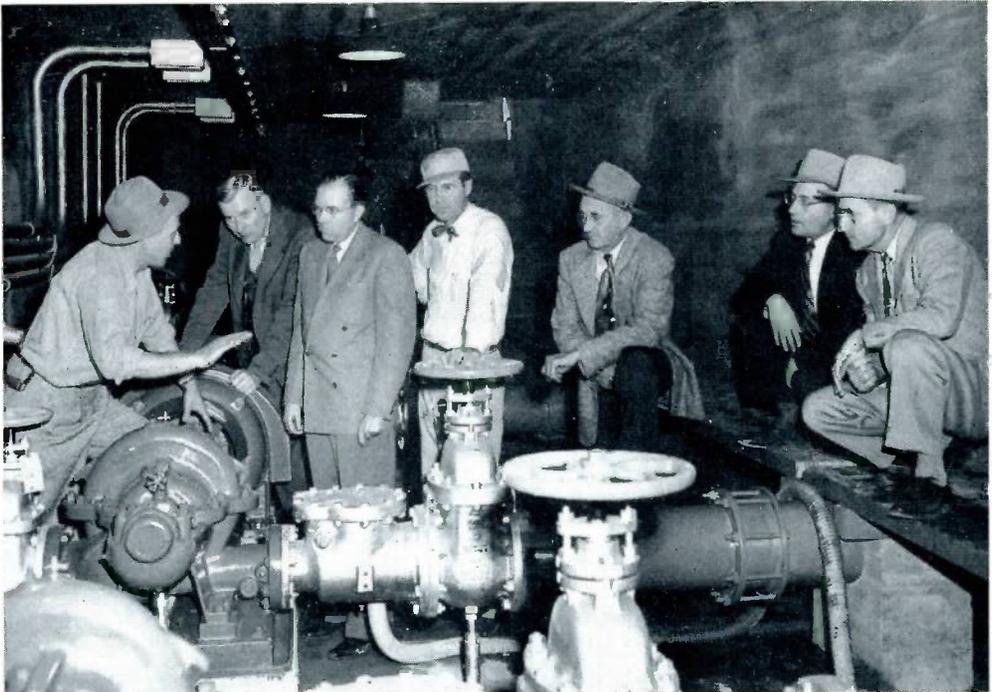
Joe McCall was water superintendent during this four-year program, and re-

ceived the highest praise from the town's citizens for his efforts in their behalf.

The first step following approval of the bond issue was the purchase of the Platte Canyon Ranch for its water irrigation rights. A court decree to change the point of diversion with the use of water changed to domestic use was asked in District Court. The Court found in favor of Englewood and the decision later was upheld by the Colorado Supreme Court.

The 25,000 acre Platte Canyon Ranch is located some twelve miles from Englewood and the Platte River which runs through this ranch is the Englewood's source of supply. About \$350,000 is invested in the ranch including land and water rights. The land is now leased to a new plant which will engage in defense work.

One of the first problems after the ranch was bought was to divert the outfall of sewage from a neighboring town to a point below the new diversion dam.



THESE MEN WERE at the helm of the Englewood, Colorado, city government when this picture was made. Listening to Joe McCall, left, former Englewood Water Superintendent, explain a part of the new system are, from left, Fred Jensen, city councilman; Dr. Gatewood Milligan, city councilman; Mayor Charles R. Allen; Chet Maddock, city councilman; Mark Shivers, City and Water Board attorney; and J. Woodman, city councilman. This group launched Englewood's move to acquire its own water system.

This move cost the city some \$34,000. The next step was the actual construction of the new diversion dam at a cost of \$37,000.

Other parts of the water system constructed during the period of 1948-52 included:

Reservoir at the diversion dam costing \$37,000.

Treatment plant costing \$472,000.

Pumping plants and clearwells costing \$96,000.

Two regulatory reservoirs costing \$27,000 and \$123,000 respectively.

Elevated storage reservoir No. 1 costing \$146,000.

Elevated storage reservoir No. 2 costing \$126,000.

Main transmission lines costing \$127,000.

Since these first installations, the city has added another clarifier and appurtenant structures at the plant costing \$93,000. The city is now adding two filter beds, larger pumps and other accessories which will cost \$193,000.

These accomplishments presented some tremendous problems which at times appeared to be impossible for those engaged in the task.

Helping Mr. McCall throughout the entire project was Everett L. McNutt,



FORMER WATER Superintendent Joe McCall, left, talks over progress of the new system with two contractors.

who later became the water distribution superintendent in Englewood. Mr. McCall resigned from the Englewood position following completion of the proj-

STANDING IN FRONT of Englewood's new municipal building are Mueller Co. Sales Representative F. R. Seevers, left, and former Water Superintendent Everett McNutt.



ect to join an industrial firm in Denver. Mr. McNutt has just left the Department to accept a new position. John Jenks has been named the new superintendent.

Mr. McNutt continued to uphold the high reputation of his office established by his predecessor. To insure an adequate water supply for the future—the present available supply is about seventeen and one-half million gallons a day from the Platte River—the Englewood Water Department has leased a number of emergency wells and irrigation ditch rights.

Other water sources give the city a possible total of 29 million gallons a day. Today's population, according to the city's Chamber of Commerce, is in excess of 26,000 and is still growing.

Industry appears to like this area. An electronics plant recently was built in Englewood and the city already is becoming an industrial center.

Englewood residents have had their water department for more than four years now. The system was completed in 1952. Many have probably forgotten the four-year struggle for an independent system. But men like Joe McCall, Everett McNutt, City Engineer Harold H. Babcock and former Mayor Charles R. Allen haven't forgotten that the city had no water or sewers, and was completely dependent upon Denver for water service.

That's one period in their lives they will remember vividly for a long time.

●

A platoon of Martians landed on Broadway in New York City. "Men," said the leader, "this doesn't look like the capital to me."

"Why not ask him?" said a lieutenant pointing to a fire hydrant.

"Don't be foolish," said the captain. "Can't you see he's only a child?"

The solicitor was trying to sell a subscription to his farm journal.

"It will help you be a better farmer," he said.

"Nope, young man, I'd better not subscribe," the farmer retorted. "You see, I ain't farming as well as I know how now."

Chance remark: Anything a man happens to say while two women are talking.

Pointing to 100,000 . . .

(Continued from Page 11)

boom, the Korean War, and the post-war effects of that hostility on our national economy have pushed that city into a position of national prominence.

One of Aurora's greatest accomplishments during this period was the establishment of a municipal water system. Aurora, however, has for most of its years been blessed with an adequate water supply. Since 1918, the city has depended upon the Denver Water Board for this vital commodity, but in 1952 when Aurora's amazing growth surpassed that which Denver had expected to supply, Auroran citizens voted to wean themselves from the metropolitan parent and build their own water system, one that would support future growth as well as present needs.

Oddly enough, this is the second time in Aurora's history that the city has enjoyed its own water system. The town, originally known as the "City of Fletcher," was established in 1891. A 19th century land developer with 20th century techniques gained ownership of the land where Aurora became located and sold two-acre homesites to all takers.

His name, quite naturally, was Fletcher, and he was as shrewd a man as ever came west to Colorado. Mr. Fletcher kept one eye peeled to the future. He first organized a city council and very likely was the first mayor. He realized that for a town to continue to exist, it had to have an adequate water supply, so Mr. Fletcher went about the task of building a water system. Then he sold it to the town, a move that no doubt netted him a handsome profit.

The City of Fletcher and its original water system got along fine until 1901. In that year, the source of supply, a shallow body of water known as Coal Creek, went dry. The result was that Aurora's first water system quietly folded.

Fortunately for the town, a private water firm, known as the Denver Union Water Company, negotiated with the city council and assumed responsibility for the water supply. Their source was Cherry Creek which proved to be a good

deal more dependable than the now dry Coal Creek.

In 1903, civic minded residents decided to change the town's name to something more attractive than City of Fletcher. The area was well known for its beauty, especially its early morning majestic dawns. Quite appropriately, citizens adopted an old Latin name, Aurora, which when translated means "Morning Light."

The Denver Union Water Company was purchased by the Denver Water Board on November 1, 1918, and from that day on, Aurora was served by the City of Denver's municipal water department. The years 1920-40 were pretty much the same for Aurora. The population remained around the 3,000 mark, and the citizens, if they chose to rise early enough, continued to enjoy the beauty of the early morn.

SCENE CHANGES

Then in 1940 the scene changed overnight. The population influx, resulting from defense preparations prior to World War II, doubled Aurora's population from 3,000 to 6,000 in just a few months. This was brought about mainly by nearby military installations including Lowry Field, Buckley Naval Air Station, the Fitzsimmons General Hospital (which has been in Aurora since 1918), Denver's Stapleton Municipal Air Field, and the Rocky Mountain Arsenal.

Aurora's big industrial development program was launched in 1947. Land formerly known as the "Agricultural Land of Aurora" suddenly became sites for new subdivisions. Hundreds of incoming families jumped the population from 6,000 to 11,000 between 1947-50, and in 1950 the WALL STREET JOURNAL wrote that Aurora was the fastest growing suburban area in the United States. The JOURNAL cited the 227 percent increase in population from 1940-50, but even more startling, perhaps, was the period 1950-55 when the citizenry grew from 11,000 to 33,000, a 327 percent increase. In the past year another 5,000 residents have moved to Aurora, and the current population is estimated at about 38,000.

By 1952 the water distribution system had reached a point where it no longer was adequate to meet the needs of the city. Shortly thereafter, the city let a

contract for 10,000 feet of steel transmission pipe which was to be connected to the City of Denver.

Meanwhile, the Denver Water Board also was experiencing some tremendous growth problems. Steps had been taken by the Denver Water Board to secure a new supply through the Blue River Transmountain Diversion. Transmountain Diversion work eventually will bring water from the Western slope of the Rocky Mountains under the Continental Divide to the Denver area.

The Board took an important precautionary measure in 1952 designed to budget the use of water. The Denver "Blue Line" was established. This was a geographic boundary past which water service of Denver supplied water could not be expanded until more water became available from Transmountain Diversion work.

It was estimated that this boundary would take into account all possible growth for the next ten years, but the unexpected happened. Aurora, like Denver's other suburban areas, and Denver itself, continued to grow. After two and one-half years, the Blue Line around Aurora was reached and so was a crisis.

With the Denver Water Board unable to spare the required amount, Aurora then knew she must install her own water system or healthy growth could not continue. It was a good decision because in 1953 the rapid growth continued at a greater pace. One housing project averaged eleven new homes a day for seventy days, and this was just one of nine housing projects at that time.

Anticipating an even greater future, the city in 1954 annexed 926 additional acres to be developed representing 1,500 home sites, 276 acres for industrial development, a 150-acre golf course, 22 acres for schools and 11 acres for parks. At present the city comprises 3,280 acres of homes and commercial land, and has an additional 976 acres for immediate growth. But we are getting ahead of the story.

Aurora's City Council made an important move early in 1953 when they hired a water and sanitation superintendent. He was Paris L. Guy, a young, aggressive water engineer who in the next three years was to perform a masterful job for Aurora and its new water department.

Mr. Guy's first move was the investigation of all possible water sources. Like his predecessor some 50 years earlier, he chose Cherry Creek as the initial source of supply.

Aurora's march toward its own water system includes these projects:

1. Completion of the 1.7 million dollar Cherry Creek project this year. The stream bed of Cherry Creek, like many Western streams, has little or no surface flow during most of the year. However, there is an abundant supply some 18 to 20 feet below the surface. This supply is reached by shallow wells, and the resultant water is quite pure and clear requiring only chlorine treatment before delivery to the customer. This water is brought to the distribution system through a 27-inch line which is controlled by Mueller valves.

In conjunction with the overall plan, a great deal of large diameter pipe (larger than was required for immediate or near future needs) was installed to provide for adequate distribution to future growth areas. It is interesting to note that in the past six years, an average of 5.79 miles of pipe per year has been installed in Aurora. It is estimated that in the future this average will be raised to 8.6 miles per year.

2. The Clark Project: This consists of the purchase of irrigation rights to wa-

ter on the South Platte River, and includes the construction of a treatment plant, a large pumping station, and 120,000 feet of 36-inch conduit. This project is estimated to cost 3.9 million dollars and will be completed in 1958. Also included in this project is a second line paralleling the 27-inch Cherry Creek line to provide for ultimate service of their "own" water to all of Aurora.

3. Participation, along with other east slope communities, in the Boettcher—Elliott Plan for the development and transportation of trans-mountain water. This water is expected to be available between 1960-62 and will provide enough water for all of the City of Aurora plus enough water for development of the city to a population of 100,000. Expected cost of Aurora's share in this project will be 7 million dollars.

4. Upon completion of all these projects, Aurora expects to be completely independent of Denver water.

Aurorans look forward to having a city of some 70,000 by 1965, and perhaps reach 100,000 before too many years after that.

Unlikely, you say! With such optimism, and a proven record of solving growth problems in a hurry, Aurora may well surpass that mark, and in less time than they expect.

. . . The Jokes On Me . . .

"I don't see why you haggle so with the tailor over the price of that suit. You'll never pay him anyway."

"I know, but I don't want him to lose more than is necessary."

If a man wants his wife to pay attention to what he says, he addresses his remarks to another woman.

Two society leaders in an African Cannibal tribe were discussing their marital problems. "I don't know what to make of my husband these days," one of them said.

"Don't let that bother you, the second reassured her. "I'll send over my new book of recipes."

Wife: "Oh dear, I've missed you so much." Then she raised her revolver and tried again.

Did you hear what the driver of the jalopy said to the driver of the new Cadillac that pulled up next to him?

"Hi, stupid. What question did you miss?"

Many a wife is outspoken—but not by many.

Speed fiend, slowing down a bit and taking a deep breath of fresh air: "Whee! aren't you glad you're alive!"

Timid passenger: "Glad isn't the word—I'm amazed!"

Introducing:

Ronald J. Rogers, Order Interpreter

RONALD J. ROGERS, order interpreter for our Chattanooga plant's Sales Department, has been with Mueller Co. since February 24, 1941, and in his present position since February, 1950.

Beginning in the Machine Shop, his career was temporarily interrupted in July, 1943, for Army service as a combat engineer. He was awarded the ETO campaign ribbon with four battle stars and one arrow head, and a purple heart with one oak leaf cluster. He returned to Mueller Co. in November, 1945.

As order interpreter, Mr. Rogers' duties are just as his title indicates. Orders coming direct from customers often are not completely identified as to proper name, etc., and to rush handling plus making certain the right products reach the customer, he first interprets what is wanted, rewriting the order if necessary.

Mr. Rogers was born in Flat Rock, Alabama in 1919, but moved to Chattanooga in 1926 and has lived there since then. During his high school and college days, he was quite an athlete. As a fullback on Central High School's team in Chattanooga, he was chosen on four All-City teams, the All-State team, honorable mention on the All-Southern team, and was awarded a scholarship and played guard at the University of Chattanooga.

He also has attended the Kirkman Vocational School, Tennessee Temple



RONALD J. ROGERS

College, University of Tennessee Extension and presently is enrolled in the LaSalle Extension University.

He has been married since 1942. His hobbies are fishing, boating, color photography, and flowers. He is very active in church work and serves as a deacon, Departmental Sunday School superintendent, sings with a male quartet, is a member of the Church Building Committee, and Assistant Treasurer of the church.

Denver's Senior Tapper . . .

(Continued from Page 13)

Mueller Co. hopes Mr. Powers will make that trip, too. It's nice meeting a fellow like that.

(EDITOR'S NOTE: We are wondering if anyone can top Mr. Power's record of 42 years of service and achievement as

a B-Machine tapper. It will be interesting to determine if this Denver gentleman is the nation's senior tapper in years of service.)

The biggest problem for traffic planners: Urban, suburban and bourbon drivers.

Best Water In Montana

(Continued from Page 10)

able in guarding against contamination of the water supply."

The screens over the intakes, three feet wide and 18 feet high, are in pairs; one is raised and cleaned before the other one, so the water does not go without screening.

Ammonia and chlorine gasses are added to the water at the intake dam by means of machines which mix the gas thoroughly with a relatively small flow of water that is then directed into the mains. The amounts vary from a pound to 3½ pounds of ammonia gas per million gallons and 2 to 7 pounds of chlorine.

The dosage is prescribed by the State Board of Health on the basis of tests made of water samples taken every two weeks. The "raw" water and water taken from taps in four different sections of the city is drawn—after the spigots are sterilized with an alcohol torch—and sent, packed in ice, to Helena. In addition, the City-County Health Department tests the water weekly.

From the intake dam, the water proceeds in two 30-inch mains, either of sufficient capacity so that one can be shut down for repairs if necessary and leaves sufficient capacity to supply the city.

The 2½-mile lines terminate at the distribution reservoir, a landmark to the north of the city on Waterworks Hill. This concrete tank has a capacity of a million gallons; thus its capacity is used hourly on peak days of water use. Yet, power company men said, many persons think this reservoir is the total storage capacity for the city.

SUPPLY WOULDN'T LAST

As one company worker put it, if this were the case peak use of water would empty the reservoir "like slurping up the last few drops in the bottom of a milkshake glass."

Actually, the distribution reservoir does not fill and empty. The level is kept constant by automatic float valves at the terminals of the 30-inch lines. The floats,

like two giant bass drums lying on their sides, rise and fall on the water like the float valve in the tank of a toilet.

Once one of the float valves stuck open and the overflow of the reservoir had a workout, the water pouring down Waterworks Hill below the road before the line could be shut off.

The reservoir grounds represent the peak of the power company's landscaping efforts. Manicured grass forms a setting for trees and shrubs, including graceful blue spruce, and a magnificent rock garden with a pool and a miniature stream.

From the distribution reservoir the water enters to the city through 24, 20 and 16 inch mains, then through about 95 miles of mains varying in size from 20 inches down to 4 inches. Most of them are cast iron or steel; the wooden ones, mostly of fir staves wound with wire, are being replaced with metal.

TIED WITH GROWTH

The system is extended with the growth of the city; company officials admit that the rapid growth to the south has posed some problems which, however, are being met.

The water system, from the mountains to the mains, delivers an average of 16,000,000 gallons to Missoula each day throughout the summer months.

During the sprinkling hours, the water sometimes is being delivered at the rate of 28,000,000 gallon per day.

The Rattlesnake water is augmented during the summer months, and occasionally in the winter, by water from 120 feet down in the ground. Nine deep well turbine electric pumps have been installed in the distribution system to add to the supply during peak loads. Seven of these are of 1,200 gallon per-minute capacity, the other two of 400 gallon capacity. Six are south of the river, two to the north and one in East Missoula, which is also served by the company.

The water department employs a crew of 10 full time maintenance men, plus several shop men and two service men who are on call 24 hours a day to repair a broken main or shut off somebody's broken service. The department also has a power shovel bulldozer and trenching machine, besides a fleet of radio-equipped trucks.

(Continued on Page 22)

The company currently has 9,164 residential customers and 583 commercial customers or a total of 9,747. The biggest commercial customer is the Northern Pacific Railway, which, among other things, fills its locomotive tanks. The State University with its many buildings and large areas of lawn and parks is the second largest customer.

In Missoula, the company has a system whereby a person wanting a main extended in a section not built up pays a deposit of \$3.25 per foot for the necessary main extension. The deposit is refunded at a predetermined rate each time another house is built and connected to the main so that when the block or blocks are completely built up, the person making the deposit will have received all his money back.

The power company will thaw out a frozen service if it was installed at a depth of six feet or more, and even in the big freeze of 1948-49 few customers waited more than 24 hours before the job was done.

Supplying water for cities like Missoula presents problems never experienced in most areas of the nation. Yet in that country water works men like Red Cronin think nothing of donning their snow shoes and spending several days in sub-zero mountain weather just to make sure the city's water supply is all right.

It's a tough life, but Montana Power Company men like their job.

It's a rewarding one too. They believe they are serving the best drink of water in the state.

If men acted after marriage as they do during courtship, there would be fewer divorces and more bankruptcies.

Football Prognosticator: "I can tell you the score of the game before it starts."

"What?"

"Nothing to nothing."

A taxpayer is a person who doesn't have to pass a civil service exam to work for the government.



W. R. LEOPOLD, JR.

W. R. Leopold Named Manager of Mueller Engineering Division

W. R. LEOPOLD Jr. has been appointed Engineering Division Manager of Mueller Co. The position is a new one. Frank H. Mueller is Vice President and Director of Engineering.

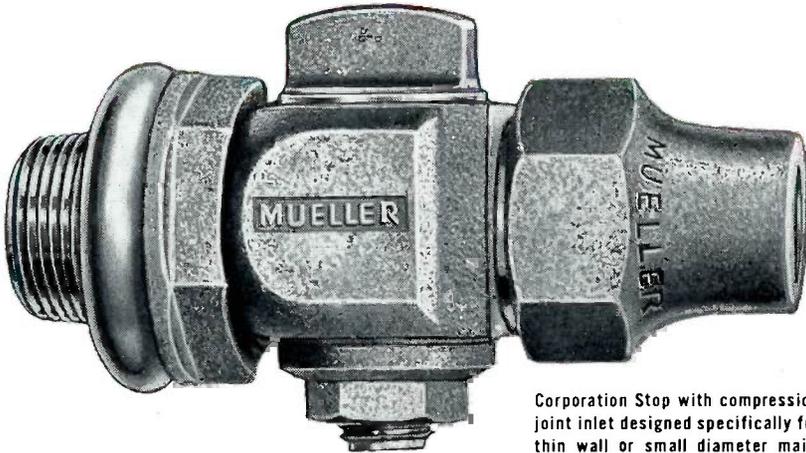
The author of a number of technical articles published in several leading national trade magazines, Mr. Leopold comes to Mueller Co. from the Lycoming Division of Avco Manufacturing Corp. in Stratford, Conn., where he was Group Project Engineer in charge of Research and Development.

He holds a Bachelor of Science Degree in Mechanical Engineering from the Illinois Institute of Technology in Chicago and a Master of Science Degree in Mechanical Engineering from the Stevens Institute of Technology in Hoboken, N. J.

Besides his position with Avco, he also has been Project Engineer for Wright Aeronautical, Woodridge, N. J.; Assistant Head of the Design and Development Division for the N. W. Kellogg Co., Jersey City, N. J.; head of a group working on mechanical and electro-mechanical devices for the Eclipse Pioneer Division of Bendix Aviation Corp., Teterboro, N. J.; and Senior Project Engineer for Barium Steel Corp., New Rochelle, N. Y.

Mr. Leopold is a member of the American Society of Mechanical Engineers and the Society of Automotive Engineers.

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A complete line of Corporation Stops with a broad combination of inlet and outlet threads makes it possible to tie into any type main. Mueller Corporation Stops are manufactured of the highest quality water works bronze, field proved by years of satisfactory service. Key and body are precision machined and key is individually lapped into the body assuring full contact around ports with no leakage. Stop is carefully inspected and air tested under water – all exposed threads are covered for shipment. All Mueller Corporation Stops can be inserted in the main under pressure with the Mueller "B" or "A-2" Tapping Machines.

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O. S. & Y. or non-rising stem. Outside screw and yoke (O.S.&Y.) or non-rising stem gate valves can be furnished with bevel gears for horizontal installation or spur gears for vertical installation.

"O" ring or conventional stem packing.

Two "O" rings, one located above the thrust collar and the other below the thrust collar, provide a positive seal against leakage around the stem. The higher the pressure, the greater their sealing force. Lubricant, sealed between "O" rings, keeps thrust collar permanently lubricated.

Conventional packing is kept tight with packing gland flange adjusting bolts. Valve can be repacked without removing packing gland.

Choice of ends. A wide selection of ends—hub, screwed, flanged, universal, mechanical joint or spigot with many different combinations make the Mueller gate valve adaptable to any main.

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