Recollections, Vehicles & Feats

A hodgepodge of stuff in my life
intended for amusement
and passing of information onto offspring's

By

John Wolever

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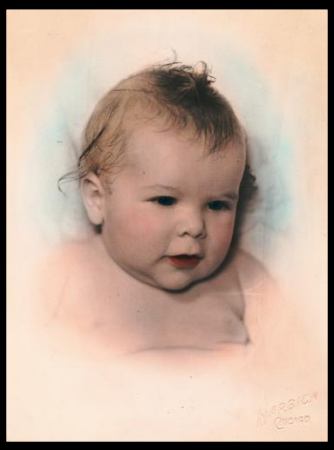
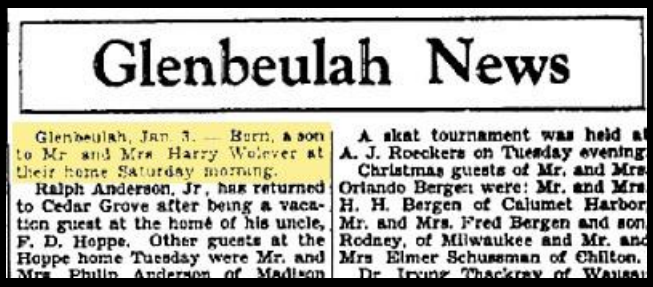
1939, DECEMBER, I APPEARED

This was not a recognition, rather hearsay. I was born in Glenbeulah, Wisconsin 12/30/39 (about 4:20 am).



Glenbeulah is a village in Sheboygan County, Wisconsin, United States. The population was 463 at the 2010 census. Glenbeulah is situated on the Mullet River. A post office called Glenbeulah has been in operation since 1860. Glenbeulah was named from its setting in a glen, and in honor of Beulah, the mother of a railroad contractor.



Glenbeulah News

Glenbeulah, Jan. 3. — Born, a son to Mr and Mrs Harry Wolever at their home Saturday morning.

Ralph Anderson, Jr, has returned to Cedar Grove after being a vacation guest at the home of his uncle, F. D. Hoppe. Other guests at the Hoppe home Tuesday were Mr. and Mrs. Philip Anderson of Madison

A skat tournament was held at A. J. Roeckers on Tuesday evening

Christmas guests of Mr. and Mrs Orlando Bergen were: Mr. and Mrs H. H. Bergen of Calumet Harbor Mr. and Mrs. Fred Bergen and son Rodney, of Milwaukee and Mr. and Mrs Elmer Schussman of Chilton.

Dr. Irving Thackrey of Wausau

I was born at home with assistance of Dr Hansen who had an office in Glenbeulah.

His father's name was John, my father's father (grandfather) was John, and my mother's father (grandfather) was John, so I was named John.

There was a cat living in the house and there was problem or concern that I might be allergic or something. So, it was relocated to a farm someplace several miles out of town. A couple years later the haggard cat showed up at our house.

As the story goes, she came in the house, checked out all the rooms, the jumped on the sofa and went to sleep – she was home... She remained in the family and later relocated to our own farm in 1945. I heard that the cat once had kittens while on Lois's lap. Her name was "cat".

➔One of the first thing I remember (age 3 or 4) was going to the scene of a house fire in Glenbeulah. Dad belonged to the volunteer fire department (was also the village Constable) and had gone ahead with the model A Ford. It was only about a mile away, and my mother and sister Judy walked me there. Our model A was parked there, mother asked if I wanted to wait in the car, they were going back home. That sounded good in the beginning, then when they were maybe a hundred yards away, I

panicked and started yelling wait for me. I did not want to wait in the car all alone watching a house burn.

Me standing on picnic table at Glenbeulah home.

➔I had a friend (David) that lived across the street, we got in trouble a few times. One day we were playing in the garden at his back yard. There were some earth worms crawling through some dead vegetation. It was in the Fall and things were dried up. Feeling sorry for the worms on a cool day we decided to burn some dead leaves to warm them up. Problem is the wind blew the flames toward the church and an area of dry grass. It soon got out of hand and people came running to put out the fire.

Sometime later we were playing around in friends family car parked in their driveway. In those days it was common to leave the keys in the ignition. David turned the key and the car started. It was in reverse and started backing toward the street. Dave turned the steering when and we made a u turn onto the street and back, stopping against something. No harm done.

On Sundays, the family would go “over home”. This was the Rentmeester homestead where Mothers parents lived. Many of her siblings would be there.

The Rentmeester’s were musically inclined, and they would play lots of music. And play lots of cards.

I remember choking on a lemon drop. I had the lemon drop in my mouth and was bouncing on the leather sofa when it got lodged in my throat. I started turning blue when fortunately, mother saw I was in trouble and lifted me upside down by my feet and slapped me on the back.

I don’t remember much else, strangely I remember a wooden barbell that Uncle Clem made from a log. And many visits when Grandpa was on his death bed, he died Sept 9, 1947 at age 77 (I was 7). He was a tough guy, his organs shut down, but his heart kept going. He was in a comma for days

They named the road that goes past the Rentmeester homestead “Clem’s Rd”

➔I remember having air raid exercises in Glenbeulah (1944?). The town would require everyone to turn off all lights so potential Japanese bombers would not see towns. The fire department would activate a siren code which signaled the blackout.

➔A relic of Wisconsin forests were fire towers, perched over the treetops to spot smoke and fire since the 1930. It was a popular place to go as kids, climb to the top and look at the scenery. All 72 towers were taken out of service in 2016.

1945, FEBRUARY, MOVE TO SPRING FARM

The Glenbeulah home was traded for a small farm about 7 miles away, near Plymouth. The property value was negotiated to $9,500. The primary purpose for moving was dad's health issue. Years of breathing lead paint fumes as a painter decorator was affecting his wellbeing.

The Glenbeulah bank gave dad a loan ($3,000) so he could purchase some milk cows, a couple horses and some farm utensils. There was an auction at the new farm prior to the move.

At the time of the move (1945), there was gas rationing. Dad had saved up gas rations in advance to allow the multiple trips using his 1931 model A ford towing a trailer. (picture of similar)

The new property had a 3 bedrooms house, 1 car garage, chicken house, barn and trout pond on 72 acres.

The house had a metal roof and a cellar. The cellar had access from a stairs off the bedroom plus an exterior stairway as well. Used mainly to store canned food, it stayed cool in the Summer.

Between the house and barn was a trout pond.

The house did not have a bathroom. It did not have a well or septic. The kitchen sink had continuously flowing spring water, draining to the creek that exited from the pond and flowed past the house.

The spring was located behind the barn maybe 200 feet, not far from the road. A half metal sphere about 2 feet in diameter was placed over the spring (water bubbling out of the ground) connecting to a ¾ inch metal water pipe. The surplus water from the spring trickled in a ditch next to the road. The spring was about 15 feet higher in elevation than the house sink, allowing gravity to flow the water.

The water first entered the milk house located outside of the dairy barn. It kept a cement tank full of cool water used to store containers of fresh milk until the truck came.

House water had to be heated on the stove for bathing (sponge bath once a week).

For heat there was a coal burning stove ("Warm morning" example picture). When property stoked, it would last until morning. It heated the living room, kitchen, and downstairs bedroom.

Another wood burning stove was in the parlor which was closed off unless there was company. There was a cabinet with glass doors that was used to display artifacts from WW I and WW II. Things like helmet with a bullet hole, bullet casings from large caliber ammunition and metals (dad had a purple heart medal). The parlor was also used during Christmas providing a spot for the Christmas tree. The parlor stove also heated the 2 bedrooms upstairs, when it was used. I remember one of the upstairs bedroom closets was used to store horded sugar. Sugar was rationed during WW II.

The kitchen had another wood burning stove (with oven) for cooking (example picture).

It was replaced with a used Hotpoint electric range a few years after moving there.

The toilet was outside, a three hole'R. (example) We had a pot in the bedroom for emergency use. When it was really cold outside, urine would be frozen in the pot. I was 18 before living at a home that had an indoor toilet and hot or cold running water.

➔Soon after getting settled on the farm, we got a puppy (Teddy). Dad purchased the dog as a German Shepard for a few dollars. A couple weeks later the guy came back and wanted to trade for a different puppy, said he had sold the wrong one. Of course, the request was denied. Teddy turned out to be a wonderful dog. He lived outside with a doghouse. Was never tied up, was free to roam, but was taught to stay home and not to cross the road.

Me with Teddy

I think that's my sister Judy on left

1946, September, Started Grade School at Spring Farm School

Picture of schoolhouse many years later after being converted to a residents.

It was less than a mile down the country road where we lived (hwy “S”). It had one classroom for K-8, and one teacher. The downstairs had toilets, one for girls and one for boys, with no plumbing. The coal burning furnace along with a coal storage area and a playroom were also downstairs. During the winter the older boys were required to shovel coal into the furnace (stoke) several times a day.

A nearby neighbor would get the furnace going in the morning prior to classes. Sometimes it was cold, and the teacher would have us do calisthenics to warm us up.

Outside was a hand pump used for drinking water.

Similar to this

This was me probably 8th grade.

During recess, I engaged in questionable activities such as connecting the spiral wire from a notebook to a light socket to observe its glow and using a nickel in a fuse box to bypass the fuse.

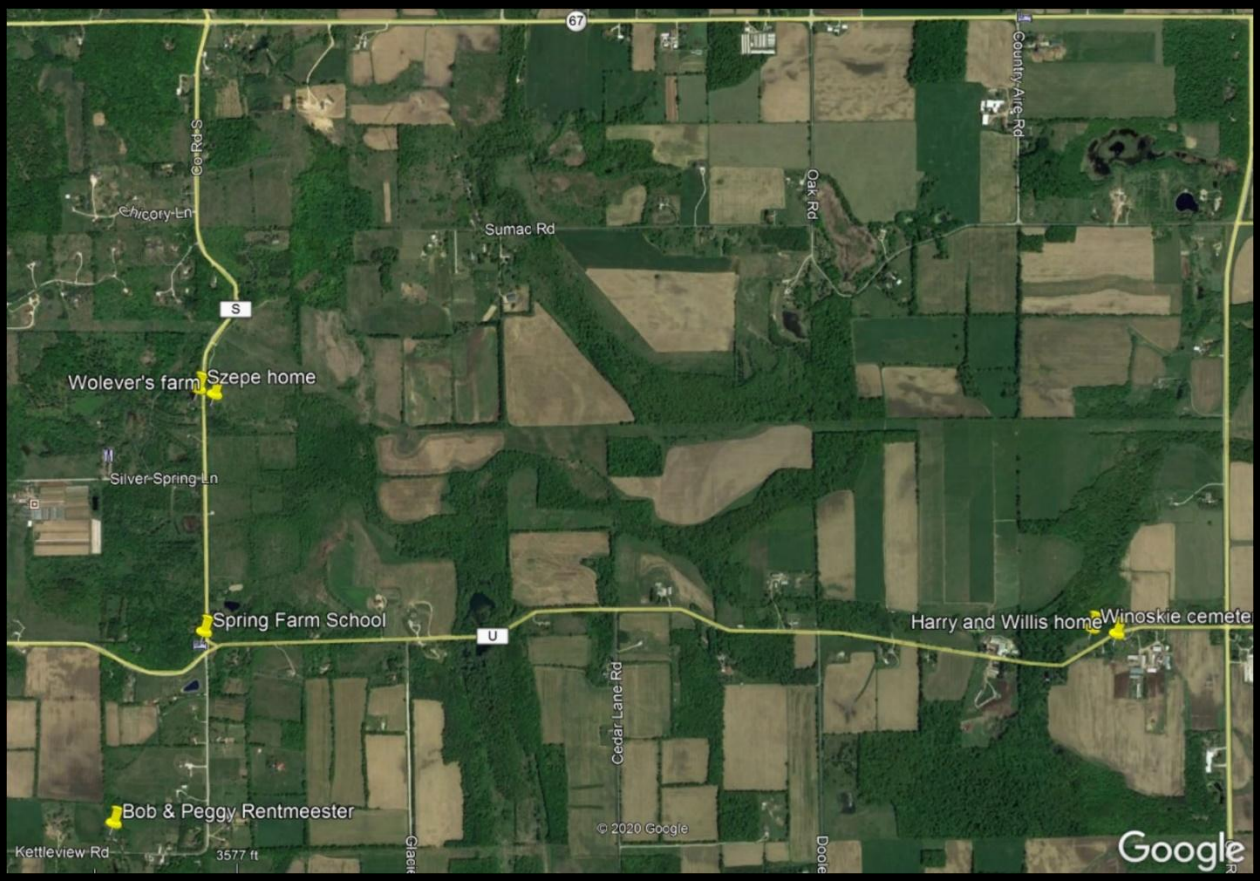
When I was in 6th grade, some 8th graders were obstructing my path while I was riding my bicycle. As a result, one of them, Harvey Glady, veered off the road into a ditch and collided with a culvert. He broke his collarbone and got poison ivy. Harvey did not hold it against me, as he acknowledged his role in the incident.

Sister Judy finished her 8th grade there. I started 1st grade a year later. I was held back a year because the other 1st grader was sick with scarlet fever. Judy attending high school in Plymouth, required a bus trip. Lois graduated from high school in Glenbeulah.

Each year the schoolhouse needed annual maintenance and repair. Dad would clean and varnish the upper level hardwood floors. Repaint the lower level and clean all of the windows. This was before Windex, something called “glass wax”, a thick pink liquid was used. Apply, let dry and wipe off. As I got older, also helped with the annual cleanup.

I remember as a student at Spring Farm school, we played a couple softball games against another local grade school. All 8 or 10 of us travelled to the Winooski school for a game. Then later in the year the Winooski kids traveled to Spring Farm for a game.

Winooski school



➔I had a connection with mechanical things, spent a lot of time with Erector set that I got for Christmas.

Also remember getting a wagon for Christmas one year.

We always had a Christmas tree from the woods. It was decorated with bubble lights and lots of tinsel.

I always liked clocks, was amazed at how it used a lot of gears to keep time. Someone donated an 8 day clock something like in the picture (only had to wind once a week). I could never get it to run very long.

We had a telephone. Something like this with a hand crank that generated power from a little internal generator. If you wanted to make a call, either you made a long crank (several turns) to get the operator, or used a series of long and short crankings for people on the local line. For example our phone was assigned the code 4F21, which ment we would answer when we hear 2 long and one short ring. And of course anyone on the line can pick up to listen to the conversation. The telephone also had large dry cell batteries inside the case for activating the ringer when someone called.

When calling long distance, or someone on a different line, the operator was needed. Fairly routinely a call was placed to my syster living in Plymouth by first ringing for the operator (long crank) and telling operator to plug connection to her line and cause Lois's phone to ring (she already had a dial phone). One day following the long crank, Lois answered rather than the operator. The operator appearently pluged in her line before our call was made.

A few years later the crank telephone was replaced with a dial telephone.

➔One day my mother and I were visiting the neighbors across the road. When it was time to return home, she decided to walk thru the woods behind the neighbor's house. It was kind of swampy and she stepped into a hole in quicksand. I ran back for help and the neighbor pulled her out.

➔Every Saturday night my folks would get together with the Zimmerman's (from across the road) and the Meyers (uncle and aunt) to play poker. They took turns hosting the event, providing drinks and snack. They would play penny ante poker with a quarter bet limit. Very little traditional poker, mostly fun based variations with many wild cards. After a night's playing (maybe 11:00) the typical loser would be down less than $10. This went on for years.

➔I remember one Sunday afternoon, the Zimmerman family that used to live across the road were visiting. The boys were now about 10 and 13, I was 11. The older one, John, thought it would be fun throwing stones at cars passing by. After a few cars, my Uncle Bert happened to be driving by. He stopped and tattled on us.

That did not go over well. For punishment I was told that I would not get the pony they were planning on giving me. Well, that was not so bad, I didn't really want a pony anyway, I was hoping for a bicycle.

➔About a month later I got a new bicycle, something like this.

As I remember we made a trip to Sheboygan with about 6 young adult rabbits, sold them off at a butcher shop.

Then went to Prange's department store for the bicycle. This was a neat place, it had escalators, and an X-ray machine in the shoe department. You could stick your feet into the bottom of the machine and view your bones in your feet when looking at the view screen.

➔In the spring, a couple years, we taped some Maple trees and experimented making Maple syrup. Drill a hole in the tree and insert a hollow wooden peg called a spile. Sap would drip out of the spile and collect in a bucket. Then the sap gets boiled down into syrup. It's a ratio of about 40:1 (40 ounces of sap produces 1 ounce of syrup).

➔The property had a couple apple trees, one was a yellow delicious. It also had several cherry trees.

➔The property had 72 acres, about 40 under cultivation. It also had a gravel pit which was handy for sand and gravel. At the base of the gravel pit was a second spring. It had an enclosed wooden box with a cover. The spring water flowed onto a makeshift basin for cattle to drink. There was a dipper cup with a long handle hanging on a hook, used to collect water if you wanted a drink.

One day dad stopped for a drink, took a big swig, but it tasted strange. He lifted the cover to find a dead possum floating on the water. He rushed home and killed any bacteria with a dose of brandy.

➔The cultivated land was used to raise alfalfa, corn, and oats. The remaining acreage was used as pasture for the cattle. The alfalfa was hay used to feed the cattle during the winter. It was stored at the upper level of the barn. The alfalfa was cut, allowed to dry, collected in rows with a machine, then loaded onto a wagon. Then the job was getting the hay from the wagon to the hay balcony in the barn. The barn had a rope and pully system that was used to transfer hay. There was a grapple fork

to grasp a bunch of hay from the wagon. It was attached to a big rope that lifted the hay to a pully at the ceiling of the barn, then traveled horizontally to the balcony. A tug on the trip line released the hay. The big rope was pulled using the model A ford (Lois was driver).

Processing the oats was a bigger deal. A machine called a binder cut the oats and made small bundles. Then manually the bundles were loaded onto a wagon and taken to the thrashing machine. The thrashing machines job was to take the bundles of oats and chew it up while separating out the oat kernels from the straw.

Thrashing was a community process. Local farmers would band together and work as a group, going from farm to farm and processing each other's crop. They would take turns sharing the thrashing machine, wagons and labor. The farmers' wives and daughters used to stay back at the house and prepare food for when the work was done. The guys worked collecting the bundles from the field and feeding the thrashing machine. It was a day or two process at each farm.

The corn was harvested using a corn binder. It cuts and gathers the stalks and funnels them until a bundle of six or seven stalks are collected. Then the knotter is tripped, and it ties twine tightly around the bundle. The bundles are later tossed on a wagon manually with a hand fork for transporting to the corn chopper. The chopper would slice up the corn making silage.

➔I remember being impressed that dad put up a stave silo for storing the silage. He purchased a used silo consisting of maybe 50 wooded staves. Each one was about 2 x 10 inches with tongue and grove, and I am guessing 24 feet long. Then there was a pile of banding bolts like 30 feet long, 5/8 diameter with threaded ends. They go around the outside of the silo keeping pressure on the staves. So how do you put it together to make a silo?

He constructed a concrete base for the silo, maybe 18 inches thick and 20 some feet diameter. Made some poles with sharp metal points on the end, about 10 feet long. These would be used by about 4 or 5 guys he invited for the erection. Somehow, they were able to stand the staves on end one at a time and match them together. Guys holding up the staves with pointed poles. Then the banding bolts were somehow added to hold the silo up. Amazing. This is an example of what the silo looked like.

Example picture of chopper blowing silage into silo. He used the 10-20 for the belt power.

➔A few years later, I was home alone and there was a storm going on. Looking out the window toward the barn, I see a small tornado twist the silo up and lay in down on the ground. The tornado proceeded to tear some trees out of the ground, continued Southwest across the road and was gone. The silo staves were piled orderly on the ground almost unharmed.

➔About 1948 Dad purchased a black 1941 Chevrolet from a private party not far from us. Used cars were scarce because of lack of production during the war (1942-1944). He paid $1,000 which was more than the car sold for when it was new. He also got a good price for the model A Ford.

The car had vacuum shift which was a power assist from engine vacuum for moving the shift lever on the right side of the steering wheel. There was no power steering or power brakes yet.

When starting the engine, rather than turning the ignition key, a floor starter switch needed pressing. The strange design made it difficult at times to press starter with toe of foot when needing to simultaneously press accelerator pedal with heal of foot.

Signal lights had not been installed on cars at that time. There were 3rd party kits which Dad purchased and installed. The mechanism clamped onto the steering wheel post with a little tracking wheel which allowed the flasher to be reset after the turn was complete. Wiring involved splicing into the brake light wires on the rear and parking light wires on the front.

➔I remember when I was about 6, a car accident that happened in front of the Spring Farm grade school. First an ambulance zoomed by our house with siren and flashing lights. It left a cloud of dust as it passed our house and on the gravel road. I ran out to watch the ambulance tear down the road. Dad yanked on my arm and pulled me back from the road as a fire truck was coming down the dusty to join the action. We had to see what was going on, so we followed the emergency vehicles. There were two cars involved, apparently one had not stopped at the intersection and got plowed into. One car ended up in the field. The ambulance took someone to the hospital. It made an impression on me; how unsafe cars are.

➔Dad added a mud room to the house (you can see where the siding is mis matched).

Picture also shows Sue Buckman and Teddy.

The mud room had a cement floor with a floor drain that drained toward the creek. There was a sink and a faucet that tapped into the spring water source. This is where the washing machine was used. Initially a ringer style, then later replaced with an Easy Spindrier.

Prior to the addition, he insulated the house and applied the imitation stone siding. For insulation he used wood shavings and saw dust from the saw mile down the road. The insulation was applied between the interior and exterior walls.

➔One year there was a problem with the spring water that flows through the kitchen sink. It must have been extra cold, or something restricted the flow, but it froze up. Interesting solution, dad hired a welder to come out and attached one of the electric welder electrodes to a section of the frozen water pipe and the other electrode to the water pipe about 150 feet away. After several minutes, the welder current warmed the pipe. The process was repeated for additional lengths of pipe until water started flowing again. The water pipe was only about a foot below the surface. I do not remember how they accessed the pipe under the frozen ground, perhaps using hot water.

➔I recall one summer someone stole the gas from the storage tank. It was just a 55 gallon drum with a facet, no lock. The gas company would make routine deliveries to farms. After the second occurrence, dad put a fresh coat of paint on the tank hoping that the thief would leave fingerprints. I do not recall any more incidents.

➔One day there was a loud noise outside, sounded like a close lightning strike. But it was a sunny day. Later we found out that it was a dynamite explosion in Plymouth

Dynamite Is Exploded By .22 Rifle Shot

Windows In City Of Plymouth Shattered By Terrific Explosion When Shot At Sparrow Hits "Dynamite" Bill's Explosive Cache In Contractor's Shed On Wheels

A 16 year old kid fired a shot at a sparrow. It drilled through a contractors covered wagon containing more than 1,000 pounds of nitroglycerin.

The shock was felt in half a dozen counties (per Sheboygan press article). We were 3.78 miles, away as the crow flies (per Google Earth). Or 5.7 miles by road.

No one was injured, but lots of window damage. We made a trip to Plymouth the next day and saw most of the windows of stores on Mill Street were crashed on the sidewalk

The dynamite belonged to "Dynamite Bill".

➔Not too long before this incident dad purchased some dynamite from him. He used it to help with the removal of a tree and a small boulder that was in the middle of the otherwise cultivatable field. I think the tree was planted next to the bounder (4 feet across? years ago to mark the location) and avoid damage to plows etc. I do not know where he learned to use dynamite. I remember the dynamite came in tubular sticks about a foot long and an inch in diameter. It needed an igniter cap stuck onto a fuse line inserted in one of the dynamite sticks. The fuse line was about 2 feet long and took about 20 seconds to reach the dynamite when lit.

It was a tedious job chiseling a hole in the stone to receive the dynamite stick.

1947, Sister Lois Gets Married

Lois married Marty Buckman, they met at the Plymouth Industrial Products company (made plastic stuff). Lois was the secretary, Marty drove truck. They rented a house in Plymouth. Soon after Marty went to work at the Kohler company at Sheboygan Falls.

➔My new brother-in-law (Marty), brought us a small flywheel engine he found someplace, maybe at an auction. The plan was to use it for cutting firewood. It was quite a job getting it to run, then lacked power for serious wood cutting.

➔Attended 4-H meetings, maybe once a month at volunteer homes.

4-H was founded with the purpose of instructing rural youth in improved farming and farm-homemaking practices. The Original motto **Head, Heart, Hands** and **Healt**h.

I was reluctant to go because I was shy about being with a lot of strangers and most of all because attendance involved a roll call where each participant responded by naming a flower.

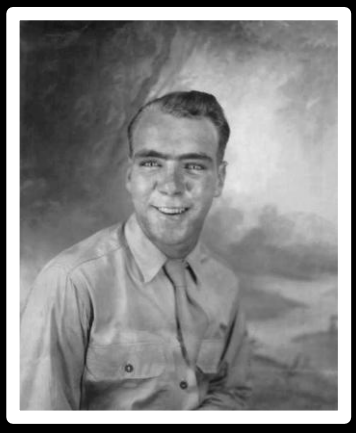
It was educational, with crafts and projects, I was embarrassed but learned a good lesson when we were making electric extension cords. Thinking I know all about it and didn't pay sufficient attention, I assembled my extension cord ahead of everyone else. When the instructor examined my work, it was rejected because I neglected to wrap the wire connections properly.

1950, FEBRUARY, COLORADO TRIP

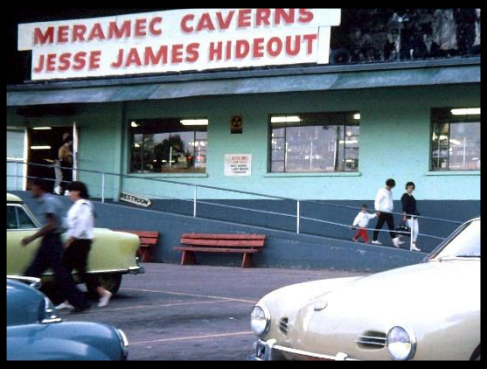
Sometime in February 1950 the family took a trip to Colorado and New Mexico.

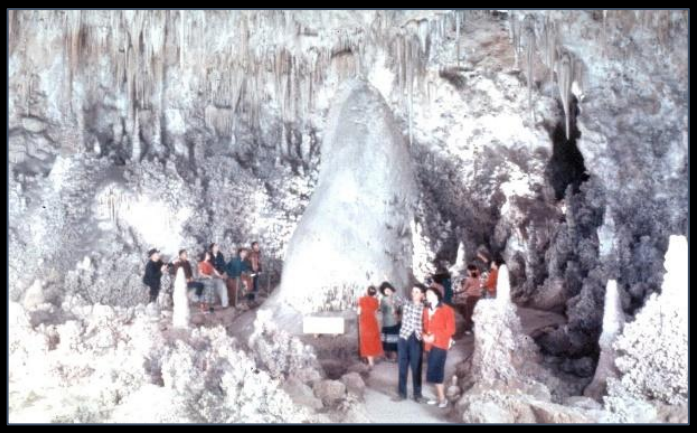
In preparation for the trip, Dad took the 1941 Chevrolet to the garage in Glenbeulah for an engine overhaul. New bearings rings and valve job

The 4 of us, Mother, Father, sister Judy and me, left the farm heading for Milwaukee as the first stop. We made it to McKernan's to spend the night. While we were visiting, my brother Clem shows up. He hitch hiked by plane and car from his home in Roswell New Mexico. He was on his way to visit us at the farm. What a coincidence, we all end up at McKernan's at the same time.



It was decided that we would continue with the trip and Clem would ride with us. It worked well, he helped drive and directed us to some tourist attractions such as Meramec Caverns in Missouri and Carlsbad caverns in New Mexico.





The Carlsbad Caverns ticket got us a bomb shelter pass. Meaning if we started getting bombed by the Russians, we could come to the caverns to hide.

We stayed mostly at bed and breakfast places.

➔About 10 miles from Denver, dad says oh oh and pulls over to the side of the road. The engine started knocking and the oil pressure had dropped. A tow truck was requested, and the car was taken to an auto repair place. They dropped the pan and discovered a missing wrist pin bolt. Apparently during the engine overhaul, one of the wrist pin bolts was not properly tightened and it came lose causing the oil pressure drop and knocking. Damage was avoided by stopping immediately.

A clever mechanic was able to drop the piston for repair of the wrist pin from the bottom. Normal piston access would have been from the top requiring a more major procedure. The next day we were back on the road.

➔We visited Clem's home in Roswell New Mexico. Met his wife Grace and new son Marvin.

A couple of years later they visited us on the farm.

This was me back at the farm teaching Marvin how to ski.

Clem gave us a tour of the air base. During the early years of the Cold War, it became the largest base of the Strategic Air Command. It is also known for the Roswell UFO incident, an event that occurred on July 4, 1947. It is alleged that a "flying disc" crashed during a severe thunderstorm near the base.

He pointed out the B-29 type plane that dropped the atomic bomb on Hiroshima.

We left Clem at his home and continued the trip to the Colorado Wolever's.

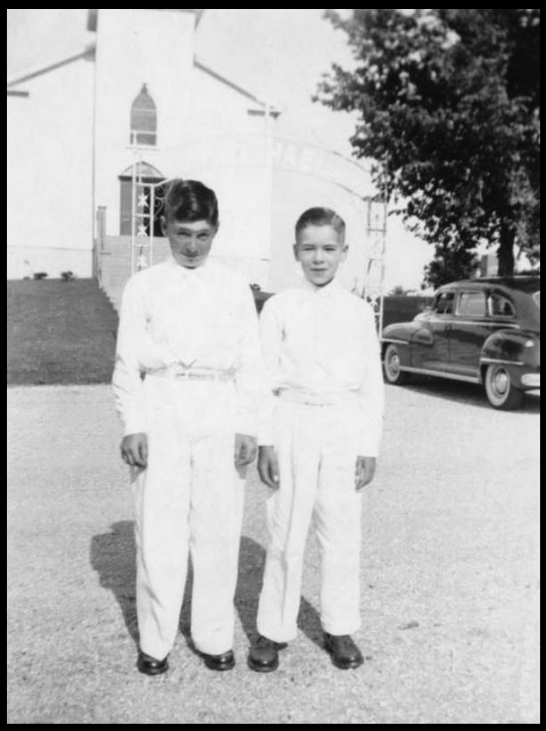
➔Covered wagon, this was how Scott and family moved to Colorado. Click my website for more information:
http://vernonite.com/photos.family.wolever9.stampede1.html

We stayed with Roy Wolever, learned to play Monopoly. And spent time at Scott Wolever's home, roller skating in basement.

This is a picture taken a few years later at Scott's ranch.

Willis, Roy, Fred, Harry, Willard, Scott Wolever

➔This was 1st communion day. We had just returned from ceremony at St Michael's near Parnell WI. The 1950 Studebaker was a recent purchase by sister Lois (and Marty Buckman). I remember as we left the church, Lois was so concerned about not backing into a barb wire fence that she put the gear shift in reverse and backed into the fence anyway putting a scratch on the brand-new trunk lid.



John Zimmerman (neighbor across the road) and me at St Michaels

We heard on the radio this day, the beginning of the Korean conflict (June 1950).

➔One day dad was cleaning the chicken house and found a nest of young mice. Several of the mice were white. He captured one and brought it into the house. It became a pet and was named Mickey. He had the run of the house and would eat from our hand. When we were eating a meal at the table, he would join use and eat from our plates. A few days later he disappeared. A year later his skeleton was found at the bottom of a glass milk bottle in the mud room.

➔This was our “jeep”, assembled from a 1926 Dodge and a model T Ford. Used as a utility tractor, not much for towing power, but could do 50 mph on the road.

A few years later Dad found another similar jeep made from a model A Ford (from Batavia for $35). I am still looking for a picture.

This one became expendable and was sold to me and my cousin Dave Rentmeester for $10.

While Dave was driving it home, about 6 miles away, the engine blew up. I suspect he was driving too fast. For a while we talked about taking it apart and trying to fix, but soon gave up and he gave my $5 back.

➔We also had a McCormick-Deering 10-20 (1928-1938). It was used mainly for plowing (2 bottom). The power takeoff pulley was sometimes used for sawing wood and running the corn chopper. It did not have a battery or starter. The hand crank in the front was used to start. I heard stories that in Colorado the Wolever's would play a prank by driving a similar tractor up to the closed door of the barn and turn it off. They could not get in front of it to crank start again.

1950, MAY, SISTER JUDY MARRIAGE

After we returned from Colorado trip, Judy got back with Gib Blanke. Our mother was against it, not sure why. She forbid the marriage, Judy went ahead anyway. We did not attend the marriage.

They rented a house in Plymouth. Gib attended refrigeration school. Then they started a refrigeration and repair store in Plymouth.

Dad was the first customer to purchase a freezer (6 ft Ben Hur).

By the following year, Gib hired a refrigeration repair man to assist. This turned out to be a big mistake. The repair man (Robert Young), needed to make trips to Milwaukee for parts.

Judy was getting lonely, not much support from mother, and started going along with Robert on trips to Milwaukee. She ended up getting pregnant and had daughter Terri in March 28 of 1953.

Interestingly, Lois delivered her son Paul at the same hospital in Plymouth, 5 days later April 3 of 1953. Then 10 days later our mother passed away.

It was a big shake up, Gib decided to accept the new baby, sold the refrigeration business, and moved to Milwaukee. He got a job at the Perlick company working on refrigeration systems design. I lived with them in Milwaukee during my 2 years attending UW-M. About a year later they got a divorce. Judy married Jerry Schutta and got custody of Terri. Gib also remarried and lived happily ever after.

➔During the summer I had to attend catechism at the Catholic church in Cascade.

I was lucky to have my cousin Dave Rentmeester attending as well. He was my protector from all the other stranger kids. Dave was a big kid, when he announced this is my cousin, they got the message. During breaks, we played softball, I was pretty bad at it.

One day there was a guy at the church with a strange machine mowing the grass. It was the first time seeing a rotary mower.

On Sundays, the family would travel to Cascade for church. My mother and sister Judy would attend mass. Dad and I would wait at the local bar. He would have a few beers and I would get a candy bar and pop.

➔I remember one day we were returning home when a hailstorm hit, dad saw the door open at the neighbor's roadside barn and drove in. We waited out the hail, no damage. This picture was taken years later.

➔Mother used to can chickens. This was before we had a freezer.

She also canned ground cherries. Ground Cherries, also known as cape gooseberries, are little orange fruits inside an attractive paper wrapper. The fruits fall from the plant when ripe, that is why they are called Ground Cherries. Other than the shape and size of the fruits they have nothing in common with cherries. Plants would appear in the garden each year with no care or maintenance. It is hard to put a finger on the taste, but hints of pineapple, mango, strawberry, or a fusion of all three with a smack of tartness on the backside.

They were great, I wish they were available in stores. Other things I miss from the garden is kohlrabi, rhubarb, horse radish, and currents.

➔There was a Fireman's fund-raising event that featured a turkey shoot. In those days, the contestants would actually shoot at the heads of live turkeys. We did not participate in that event. There was also a shooting contest using 22 rifles and bullseye targets. I think 4 contestants would shoot about 6 or 8 shots at the target and the one with the best score would win a live duck. The first time I tried it I won a duck. Well, we could not go home with just one duck, so I tried again and again but was too nervous. Finally, dad had to give it a try and finally won a second duck.

We took the ducks home and they lived at our pond.

➔There was a big leghorn rooster that would chase the ducks if they came near the chickens. One day the rooster was so intent on picking a duck he chased it to the pond, could not stop and ended up about 10 feet in the pond.

➔Another gun related event, I remember my first year pheasant hunting. The season started at 12:00 noon. Teddy and I walked out behind the house beyond the garden, and a pheasant flew up. I was ready for it and fired my single barrel 20 gauge shotgun, and down it came.

➔After several years of dairy farming, dad's health was improved. He was thinking he could make more money with a lot less work by returning to the painting business. Also, his helper Lois had moved out and Judy was next. I was still a kid, not much help.

He had an auction and sold the cattle and equipment.

Continued to raise a few pigs and chickens. The land was used for cash crops. Beets and peas for the Stokely company in Plymouth.

AUCTION

Saturday, February 5, at 1 o'clock

On the Laabs farm, located 5 miles southwest of Plymouth, 1 mile south of the old Lindow cheese factory on County Trunk S, right at the Jake Schaap saw mill.

10 Head of Cattle

Consisting of 2 Holstein milk cows, 1 Brown Swiss, fresh cow, 5 Holstein heifers springing, 1 Guernsey heifer springing, 1 Guernsey yearling. Cattle are 100% clean and Bang's tested.

Machinery

10-20 McD. tractor, new Allis-Chalmers 16-in. plow, Mc. corn binder, J. D. cultivator, McD. hay loader, sulky rake, 12 lag seeder, Plymouth feed cutter and half moon carrier, hay rack, truck wagon, Farm Master milker with one single unit, and pipe line complete, milk cans, pails and strainer and many more small items.

Feed

12 tons of choice mixed hay in mow, 12 ft. of silage in 12-ft. silo. Liberal terms—Feed, cash.

Lenard Simonsmeier, Auct. Harry Wolever, Owner

I got stuck pulling weeds in the cash crop fields.

Mostly what he called pigweed.

➔

And some mustard.

➔

➔I remember going to the Elkhart Lake Road races. In 1951 and 1952 the racetrack was on public roads. Later a dedicated track was built, and it became Elkhart Lake's Road America.

➔Dad decided to upgrade the kitchen by installing new linoleum. He purchased a roll of linoleum at the Badger paint store in Plymouth. I don't remember if my mother was involved with picking out the pattern. After spending a couple days installing it, mother really hated it. The new floor had a pattern of squares, I think red and white. After about a week, dad had to remove the new flooring and try again with a simpler pattern.

➔Constructed an outdoor bathtub. We had cold running water in the kitchen but no bathtub. Nothing fancy, dug a bathtub shaped hole in the ground out back of the house along the garden. Lined it with about 3 inches of concrete. Used the garden hose to add water (cold). I think dad used it about twice for taking a bath, no one else in the family even tried it. The tub was later used to store and raise worms

➔Sometime about 1950 I remember going along on a trip to Racine Wisconsin where dad purchased a Van Schrader rug cleaning machine. On the way back from Racine we stopped at Michael Field airport and watched some planes land and take off. Jet aircraft had begun to replace piston engine airliners.

I found this ad on eBay from 1962.

It looks like the same machine. I think he paid a little over $1,100 for the machine and some startup supplies. I would sometime go with him to clean people's rugs. It was my job to help haul equipment and supplies, move furniture and also wipe up the excess foam left after each pass across the rug.

He had many previous customers from his painting business. There were few repeat customers for the rug cleaning. He needed to charge about $100 to clean an average living room. He probably cleaned rugs for about 25 customers over several years and finally gave it up. He eventually donated the machine to Marty Buckman (son in law).

Not everyone does as well, but T. N. CODY, who started a business of his own, reports...

For 12 months I've averaged

$800

per month income

—most of it clear profit for me!

• Many men have discovered how to be independent, to be free of layoffs and bosses. C. G. Naples grossed more than $200 his first week. A father-son combination grossed $44,000 their second year. H. Lemon says, "*I netted $133 in one 8-hour day.*"

How much you earn depends largely on you, but we help you to start and work with you for your success. You need no special skill, no large investment. Start part time if you wish. Hire helpers as needed.

NO SHOP NECESSARY • Our **PORTABLE ELECTRIC DETERGER** shampoos rugs, carpets right on customer's floor. Wonderful results bring you repeat business, large fees. So efficient and safe, it is used by largest hotels and railroads.

OURS IS NOT A LEASE ARRANGEMENT • You are free to operate in an independent manner. *You* sign no contract. *You* own the deterger outright and are always *your own boss*...and every dollar you take in is *yours* to keep. *You* pay no fees, or dues, or royalties to anyone. And *you* take no risk. *Your* deterger is fully guaranteed and enough supplies come with it to return far more than *your* investment. Many earn the cost of the deterger in a week or two. It costs nothing to get the details...write **TODAY.**

Mail Coupon Today for FREE Book

VON SCHRADER MFG. CO.
911 "R" Pl., Racine, Wisconsin

Without obligation send me **FREE** booklet about your RUG DETERGER and tell me how I can start *my own* permanent, profitable business.

Name_____

Address_____

City_____ Zone____ State_____

➔Dad traded his 1941 Chevrolet for a brand new 1952 Chevrolet.

He was making quite a few trips to Madison General hospital for mother's cancer treatments. He wanted something comfortable and reliable. It was about 100 miles each way.

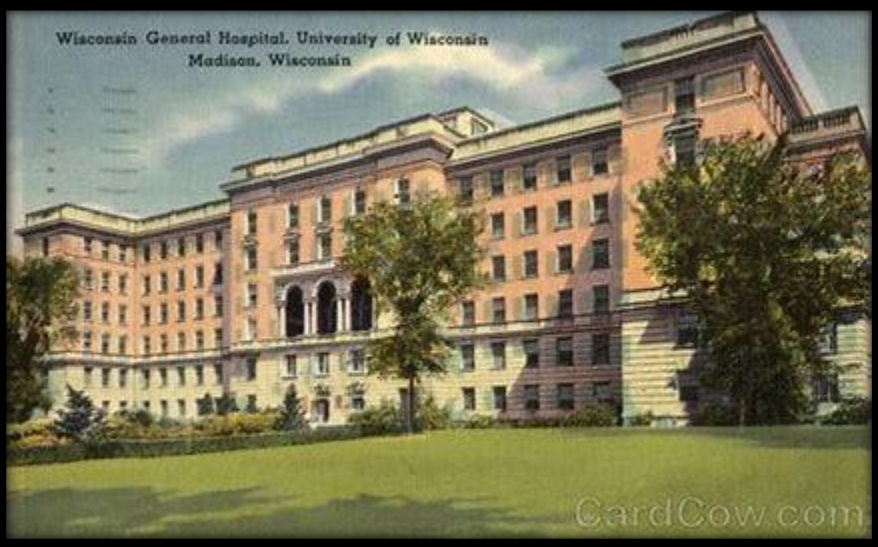
1953, April 13, Mother Passed Away

On that day I was on a school field trip to Madison. The bus picked up kids from several country grade schools.

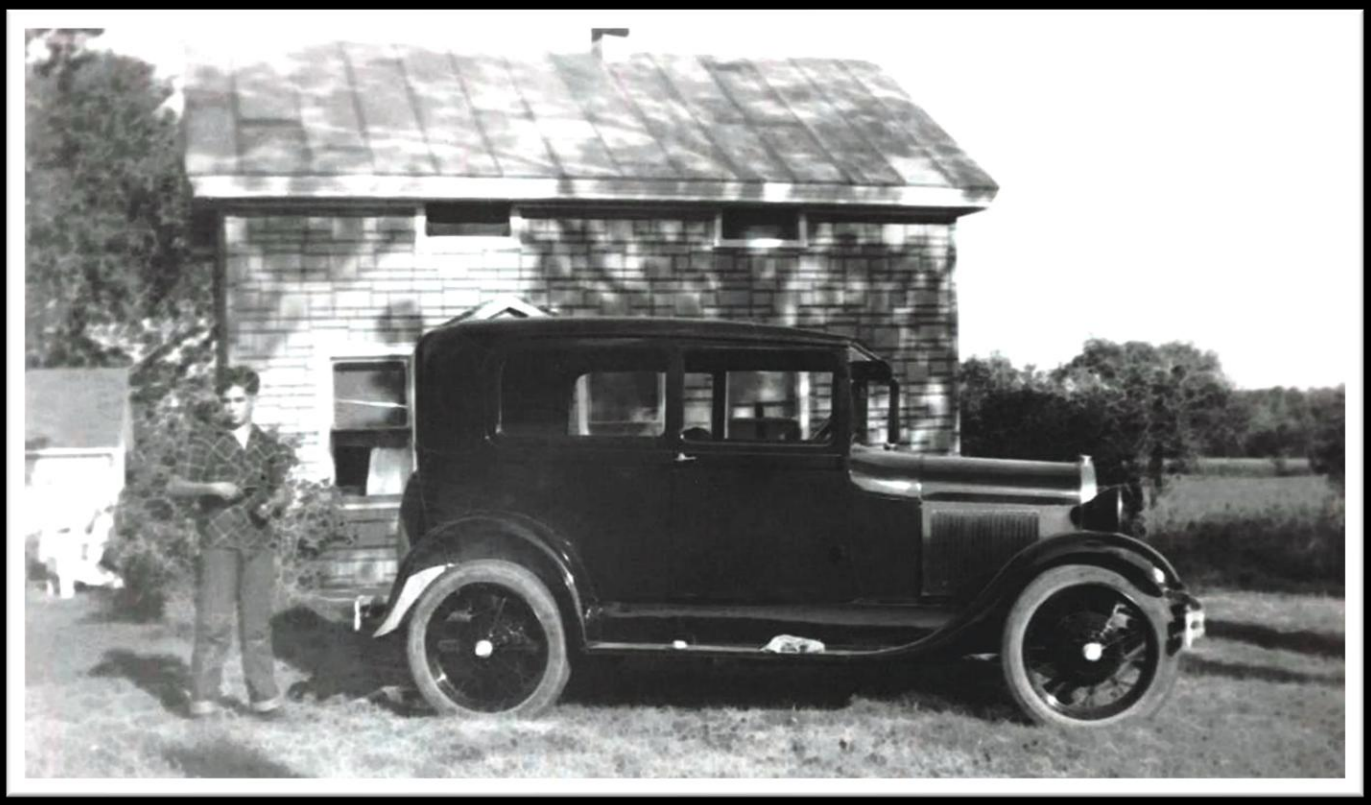
We toured the capital building and visited other places like a potato chip factory.

It was approximately the same time, when we toured past the Madison General hospital, that mother passed away.

After the bus trip ended, my teacher took me home. There were several cars in the yard, I told her “I think my mother died”.



➔At age 13 purchased first car (1928 Model A Ford).



Paid $35 to Charlie Schultz our neighbor. The engine had a little knocking sound. Dad showed me how to lower the oil pan and adjust the connecting rods. Add or remove shims to adjust the individual connecting rod tightness on the crankshaft.

Bottom view of crank case

I was too young to drive it on the road, but I could drive it in the pastures.

A few years later sold it for $50.

➔I remember dad building a carving display of a workshop.

➔The VFW was having a convention in Milwaukee, maybe 1953. I remember going there with Uncle Bill and Dad.

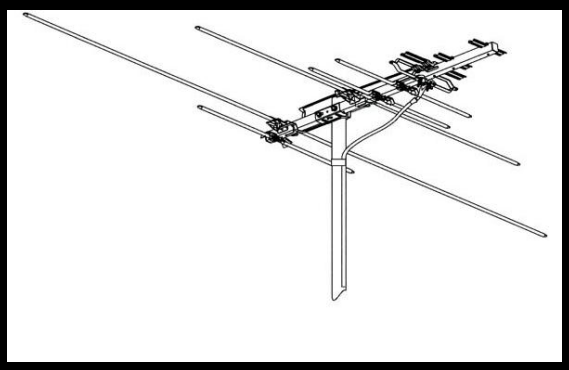
VFW parade

Electric Street cars

➔The county was starting to work on paving the gravel road past our house. The survey crew was busy marking repositioning and widening of the road with little red flags.

Dad was concerned about the close proximity of the roadside spring. After the crew left, he moved the flags a few feet to increase the distance from the spring.

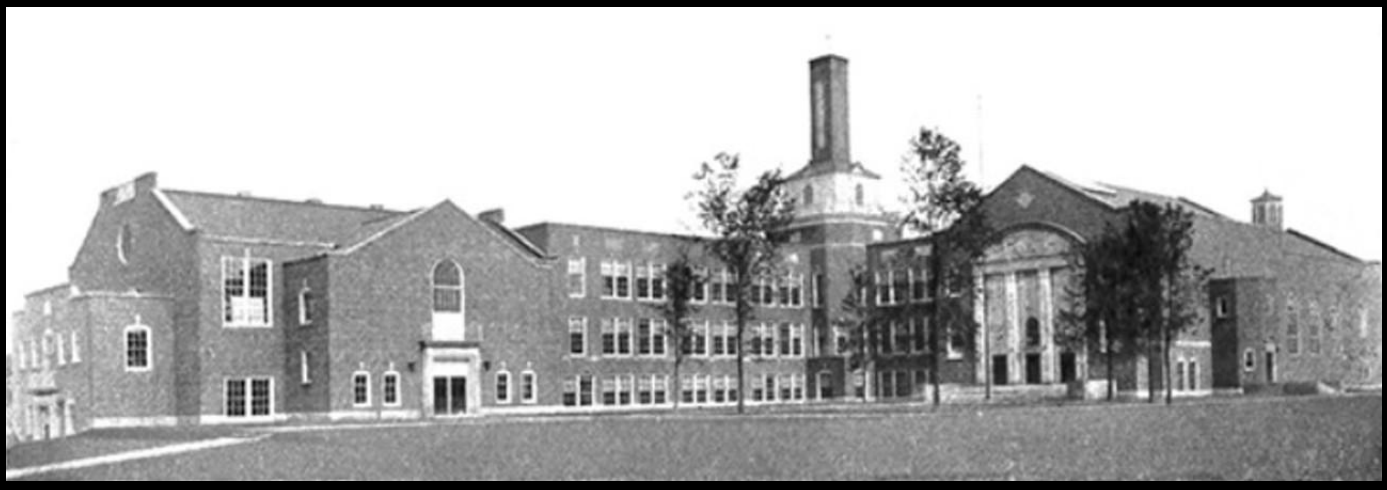
➔Our first TV was a used Hellacrafter. There was no cable or satelite, we needed a roof antenna.



There were two TV broadcasting stations, Milwaukee to the South and Green Bay to the North. This required 2 antennas, or a motorized mechanism to rotate the antenna as needed.

1954, Started High School in Plymouth

It was a little stressful coming from a little country grade school with less than ten students for all 8 grades that was less than a mile away (bicycled to school).

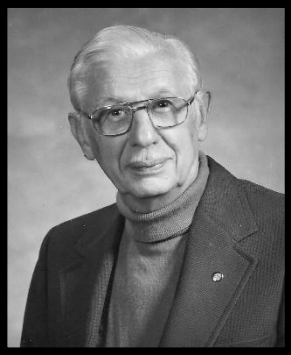


I had to ride the public-school bus as it made a 30-45 minute route in the morning and again after school.

It was about a week before the end of my first year in high school. I was mowing the lawn with one of the new rotary mowers recently purchased from the Gamble store in Plymouth.

I was operating it in some dense grass near the locust tree in the front yard. For some reason I pulled the mower back and over my right shoe. It killed the engine, but also tore up my shoe and sliced open my big toe and 2 adjoining toes. I was home alone.

I hobbled into the house and prepared a basin of water with some Lysol. Dunked my bloody foot into the water and then laid down on couch with my leg in the air hoping it would stop bleeding. About that time Emil Zimmerman drove up and saw me through the window with my foot in the air. He came to my rescue and took me to the doctor's office in Plymouth (Dr Brickbauer).



He stitched me up and my sister Lois came for me. Meanwhile dad comes home and finds blood on the floor and bloody water basin, and I am missing. Soon Lois calls him to explain what happened.

I used the sore toes as an excuse to delay the final exams at high school and avoid the signing of year books. There was no permanent damage, just sliced the toes below the bone.

➔That same year I customized a wooden German rifle stock for neighbor (later Father-in-law). I used broken window glass as a tool for shaving off thin layers of wood.

➔Made some rings from silver coins. Dad showed me how to pound the edge and then drill out the middle.

This one is from a half dollar ➔

And this is from a quarter ➔

➔About age 15, assembled a Knight kit power amplifier (18 watt?). Used for a Hi-Fi stereo system that connected a turn table for playing 33 rpm records.

➔Fishing with Uncle Steve McKernan, he drove from Milwaukee to visit and let me drive his new Ford.

I didn't have a drivers license, probably age 14?

I always remember the driving advice he told me. Slowing down before entering a curve helps maintain control, especially when road conditions might be unpredictable. Accelerating gently through the curve instead of braking can keep your vehicle stable and balanced. Braking mid-curve can sometimes cause a loss of traction, especially on slippery roads.

➔When I turned 16 it was the legal age for driving. I got my driver's license in Plymouth. There were no classes offered, not a problem, I had been driving since I was about 12.

I remember dad demonstrating how not to drive. We were traveling from the funeral of my grandmother in route to the Meyer's home. Emil Zimmerman was following us, and I think there had been some drinking. Dad was driving way too fast as we came to a 4 way stop intersection. No way he could stop in time, so looked both ways and drove through doing about 60.

Along the same lines, on another day, dad had a few drinks when we left the bar in Glenbeulah on our way home. He was going too fast to make the sharp right turn in

front of Lucroy's (where Uncle Bill used to live) onto highway S. The left side of the car was off the edge of the road and struck/bounced over a culvert. We continued back onto the road and reached home ok. The next day the left front tire was flat, damaged when it hit the culvert.

➔Dad got me a car to drive to high school. It was purchased at the Wagoner Chevrolet dealer in Plymouth for $80. It was a black 1940 Chevrolet. Something like this, without the custom wheels. It had maybe 70,000 miles, which was a lot for a car back then. It ran pretty well. Interestingly, one of my high school friends (Dick Unger) also had similar car. The ignition key for his car also worked on mine.

➔Now that I had transportation to and from school, I was able to get an after-school job.

My Industrial Arts teacher recommended me to Mr. Wagoner of Wagoner Chevrolet. I worked there after school and on Saturdays. I washed cars and did minor service work.

One day I changed the oil on a 1957 Corvette and forgot to tighten the drain plug. The owner was not happy when he got about 3 blocks, and the oil pressure warning came on. He left a trail of oil from the garage.

I was promoted to the car parts department. Hand addressed owner reminder cards and worked on inventory.

Found a dusty old unused carburetor that looked like it would fit my car. Thinking no one is ever going to need this old part, I tried it out on my car. About 2 months later the parts manager ask me if I knew what happened to the carburetor, someone was needing it. I had the old carburetor and exchanged it, but they were not happy.

➔Sometime later, a blue 1940 Chevrolet was traded in and placed on the used car lot. It was in better shape than mine (and had a different ignition key) and I was able to convince the sales manager to make a trade. I think I had to pay $35 to cover the paperwork and plate transfer.

Something like this without the custom wheels. Now Dick Unger could not use his key.

➔Built Tesla coil in high school. Example picture, (mine was about 16 inches higher), similar arcing (maybe 3 inches). Powered by Model "T" ignition coil and toy railroad track power supply. Wrapped copper wire on about 2 feet of cardboard cylinder for secondary, used aluminum foil between 8 x 10 window glass for capacitors.

PLYMOUTH — Four hundred high school students displayed articles they had made for or in the classes of Science, Mathematics, Agriculture, Art, Home Economics and Industrial Arts, Thursday evening at the gymnasium of the high school.

An added feature of this year's exhibit was the judging of the articles on display in the Industrial Arts exhibit by a group of local businessmen with cash prizes also donated by business places in Plymouth. The winners were: Wóodworking, Dave Wacker, toboggan; Warner Prange, foot stool; Jim Eberhardt, coffee table; James Waterman, planter.

Metal working, Otto LaBudde, metal turning mandrel; John Mueller, plumb bob; Ed Quackenboss, tackle box; Ralph Spradau, lamp (metal frame).

Drafting, John Wolever, machine drawing; Warner Prange, machine; Dennis Witt and Allen Luech, free hand sketching; Bob Lade, machine drawing.

Electricity, John Wolever, electron therapy demonstration board and Bill Voight, electric light cord.

Instructors are Ernest Haucke and George Hoffeman.

and bad and a section was devoted to home furnishings. Instructors are Miss Doris Curtiss and Miss Janet Van Ornum.

Ingenious

A marvel was the ingenuity used by the students in the making of the math exhibits. These students made their projects outside of class time. On display was a cannon designed by a student, effective enough to shoot a ⅝ inch pellet through a piece of ¾ inch bridge iron. There were 3-dimensional graphs; a testla coil which carries 85,000 volts and frequency of 500,000; a model home built to scale showing the primary framing; an electrical device which translates numbers from the bianary to the decimal system and models showing the path of quickest descent and models showing the basic features of topology. David Sauer, instructor.

The exhibit of the Science and Biology Dept. featured a conservation display, also an interesting display of rocks and minerals, and project showing how electricity is generated. Instructors are Frank Schmidler and Jack Andereck.

Especially noteworthy was an oil painting by Anthony Enders

➔Made this wooden bowl in Industrial Arts class.

➔Ice skating on the Mill pond a few blocks from the high school.

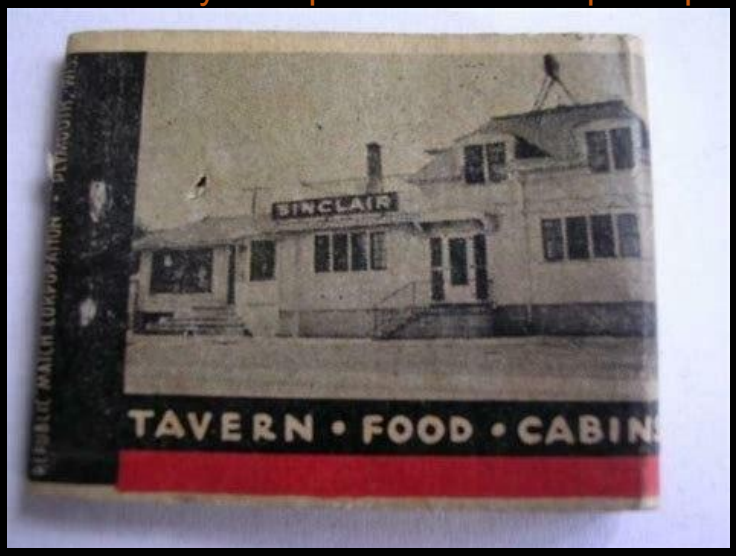
Ice skating shack, a place to put on ice skates and warm up when really cold.

➔Learned about house painting. Helped dad paint several houses during the summer when I was 16.

One day we were painting the metal roof on a grocery store in Glenbeulah. I got myself in an awkward position on the roof. I was afraid to get back to where I was comfortable and could get down on the ladder. I needed a hand to get out of the predicament. It was clear that I was not going to be a roof person.

➔Tried pin setting at Arndt's bowling alley in Plymouth.

In those days the pin setter had to pick up



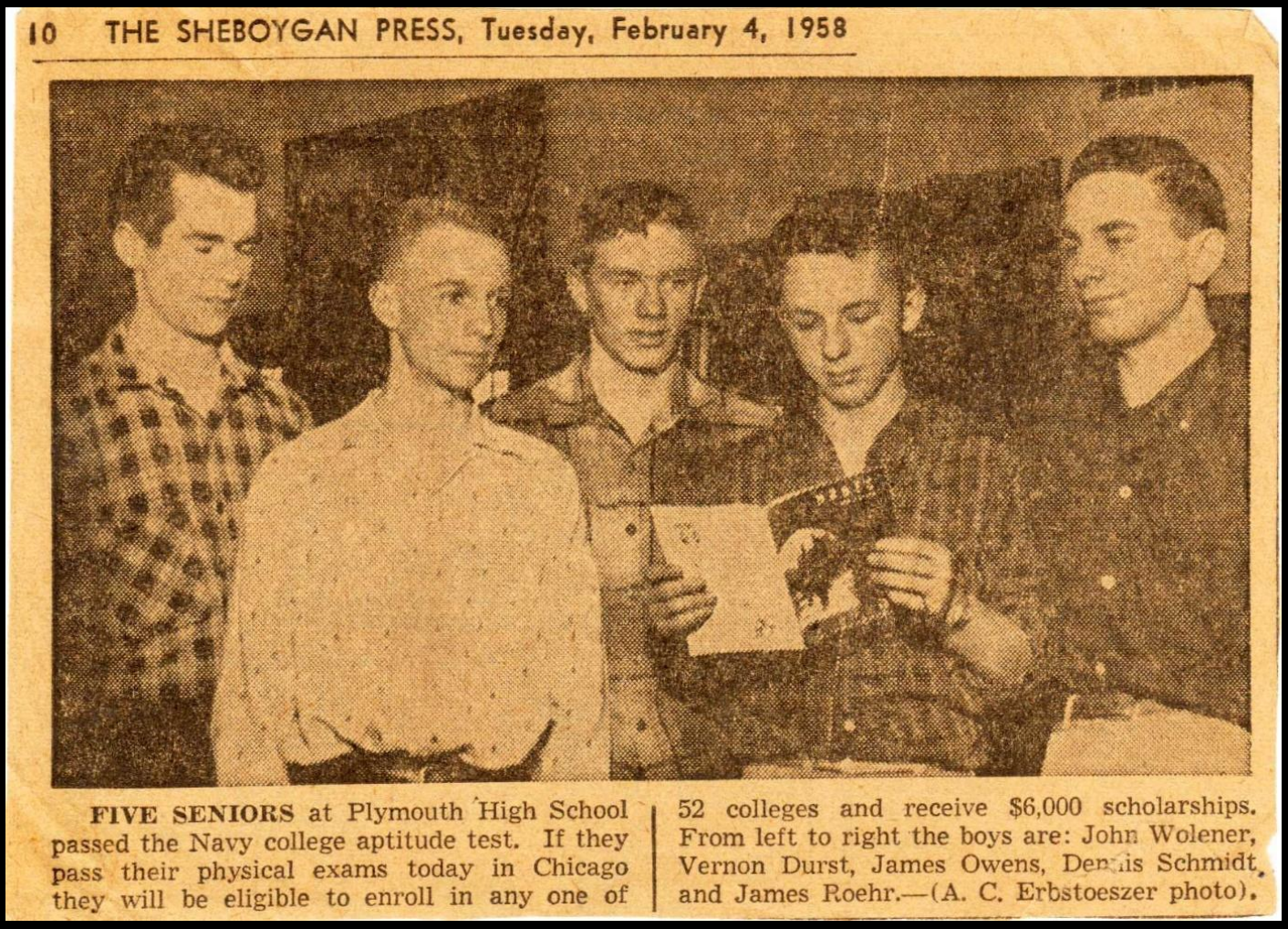
the ball, place it on the return track, pick up the pins and place them in a rack and operate a lever to make them stand up on the alley. When the bowling ball approached, I had to make sure my legs were not in the way. Then retrieve the down pins without disturbing upright pins and keep track of the number of balls in the frame. The job paid 10 cents per frame.

Open bowling was pretty easy, at a slower pace. League bowling was a hassle, being much faster paced and demanding. When all the alleys were in use there were not enough pin setters, so we had to service two alleys at the same time. It paid good for a high school kid. I walked off with sometimes $18 in one 4-hour night. The minimum wage back then was like $2.75 an hour. I stuck it out for maybe 4 nights (one night a week) before giving it up as too much stress and work. It would take the rest of the week for hands to and bruises to heal.

I think I heard years later that the building burned down (maybe a Jewish fire to collect insurance?). They also had a golf course which is still in business (Evergreen Golf).

➔Passed the Navel college aptitude test. Travelled to Chicago for the physical. Passed that too, but there was an interview which determined if I was a serious Navy career person. It required a 4 year enlistment beginning as 1st Lieutenant in the Navy.

I didn't make the cut.



10 THE SHEBOYGAN PRESS, Tuesday, February 4, 1958

FIVE SENIORS at Plymouth High School passed the Navy college aptitude test. If they pass their physical exams today in Chicago they will be eligible to enroll in any one of 52 colleges and receive $6,000 scholarships. From left to right the boys are: John Wolener, Vernon Durst, James Owens, Dennis Schmidt, and James Roehr.—(A. C. Erbstoeszer photo).

➔During my senior year the Plymouth Youth Center was opened.

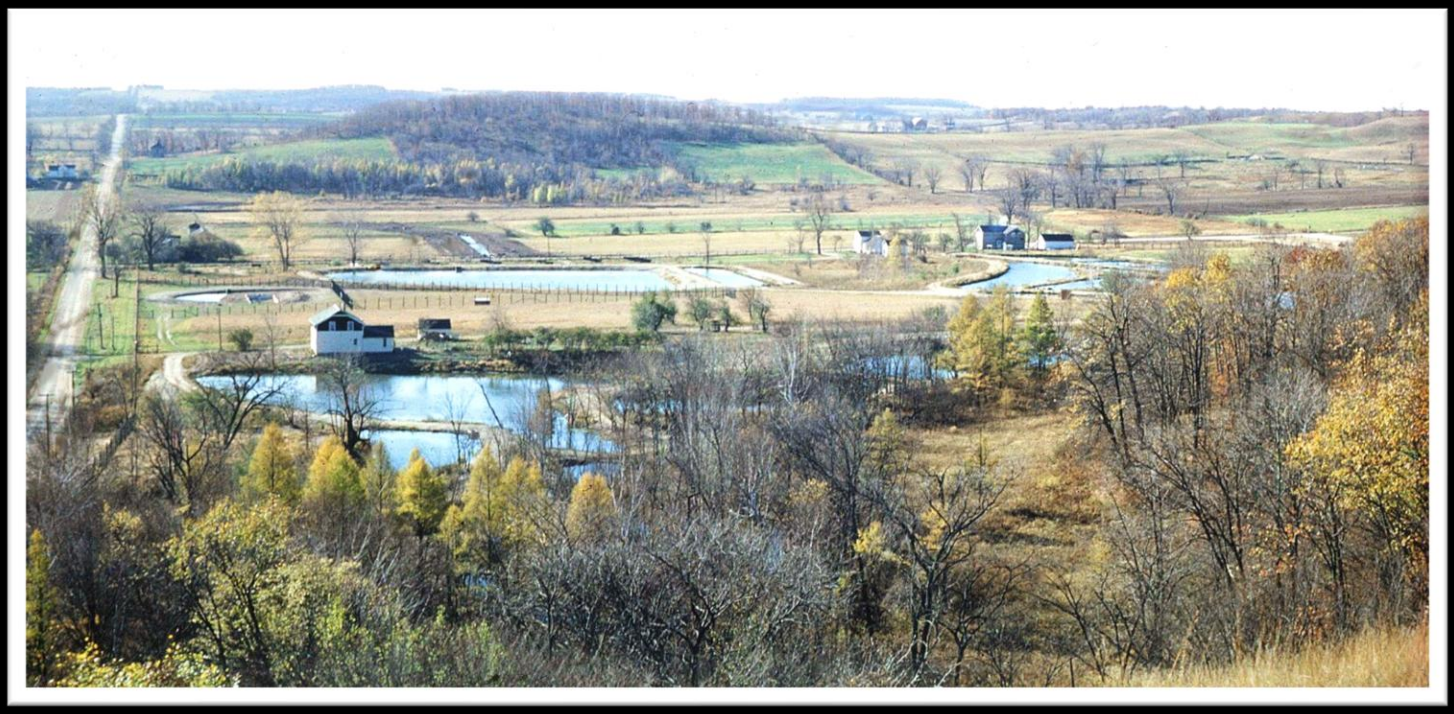
I sometimes stopped there after work (Wagner Chevrolet) to compete in playing pool. At the end of the school year there was a pool tournament. I came in second, we were playing 8 ball.

➔At about age 17, repainted house at Silver Moon Trout farm (highway S, 5-mile SE of Plymouth, WI).

This home is across the road from us, where the Szépe family lived.

Two other families lived in this house since the move to the farm in 1945. Originally it was the Zimmerman family. They had two kids. John was 1 year older than me, and Frank was a year younger. We played a lot. I was jealous of the tricycles they had.

It was a functional dairy farm at that time. A few years later it was purchased by the Langenfeld's (Paul and Ed) for construction of a trout farm (Silver Moon Springs). The barn was torn down, and the house was used for the trout farm foremen (Ray Carlson and family). A couple years later the Carlson family relocated to a different home on the trout farm property.



The Szépe family moved in about June of 1953.

Coincidentally my mother and the young son Stevie

of the Szépe family died on the same day (April 13, 1953 at Jefferson, WI). He suffered from kidney failure.

➔I was 18 and probably had a case of the German measles, which gave me swollen lymph nodes. The normal symptoms only lasted a couple days, but the lymph nodes remained swollen several weeks later. I was about to move in with Judy and Gib to start college in Milwaukee. I decided to check with Dr Brickbauer. Since my mother had lymph node cancer (Hodgkin's disease), he decided to take a biopsy of my left groin lymph node.

I had to go to the Plymouth hospital for the biopsy, then take the specimen to a Sheboygan lab for testing (dad road along for moral support). Several days later It was reported negative. I proceeded to UW-M and the lymph nodes got better over time. The stitches used for the biopsy were supposed to dissolve and therefore did not need removal. It was true but took about 5 years.

1958, September, Attended UW-M

Attended 2 years at University of Wisconsin – Milwaukee

Chose Electrical engineering (lived with Judy, Gib and Terri on 35th street).

Attended ROTC (Reserve Officers Training Corp). At that time, major universities required compulsory ROTC for all their male students.

Learned how to march, use an M14 rifle, how to fold a map etc. Was fun to wear the uniform once a week and play soldier.

I had no trouble with the easy classes like Chemistry, Physics, Science, Trigonometry, Advanced Algebra, Advanced Calculus, Metallurgy, and Drafting. But English was required, and I did poorly. So poorly that I had to retake freshman English.

Then I had problems with the teacher for the Differential Equations class. I dropped out and retook it with another teacher (and aced it).

Physical education was required, which included swimming. In order to pass the course, it was required to swim the length of the pool and back. I ended up doing a floating back stroke.

Speech was also required, I kept postponing it.

For some reason I remember trying to take a course on Numerical Analysis at Marquette University summer school. I was having trouble understanding and seeing the blackboard. I dropped out, and later had my eyes checked. I needed glasses. I can say “I attended Marquette University”.

After the 2 years, I had taken all the available classes, except Speech, offered at UW-M for Electrical Engineering. In order to continue with my EE degree, I would need to go to UW at Madison.

➔My brother-in-law, Gib Blanke, got me a summer job at the company where he worked. The Perlick company is a national manufacturing leader in commercial bar and beverage systems, residential undercounter refrigeration and brewery fittings. I had to join the union. They would give me a simple job like testing brass faucets for leaks. Attach a hose with air pressure, hold it under water and look for bubbles. After a couple days of repetitious work, I become efficient, I was warned that I am working too fast, it does not look good for others.

It was a good experience, I learned how to operate machines and beer dispensing systems.

➔I earned a little money and decided I needed a better car. I think there was an ad posted somewhere for a 1951 Pontiac. It was a little more than I could afford ($300), but I really liked the car. Big straight 8, like new whitewall tires, low mileage only 7 years old.

I talked to my Aunt Bertha (McKernan) who still lived near Locust and 27 St in Milwaukee, not far from where the car was. She loaned me $180 so I could get the car. I repaid her after a few weeks. This picture was taken from the Blanke house on 35th street where I was living. Notice the sun visor.

After a few months and many trips to Spring farm, the car started generating smoke from the tail pipe. I took it to the Glenbeulah auto repair place. It turns out one of the mechanics I worked with at the Wagoner Chevrolet place in Plymouth went into business for himself.

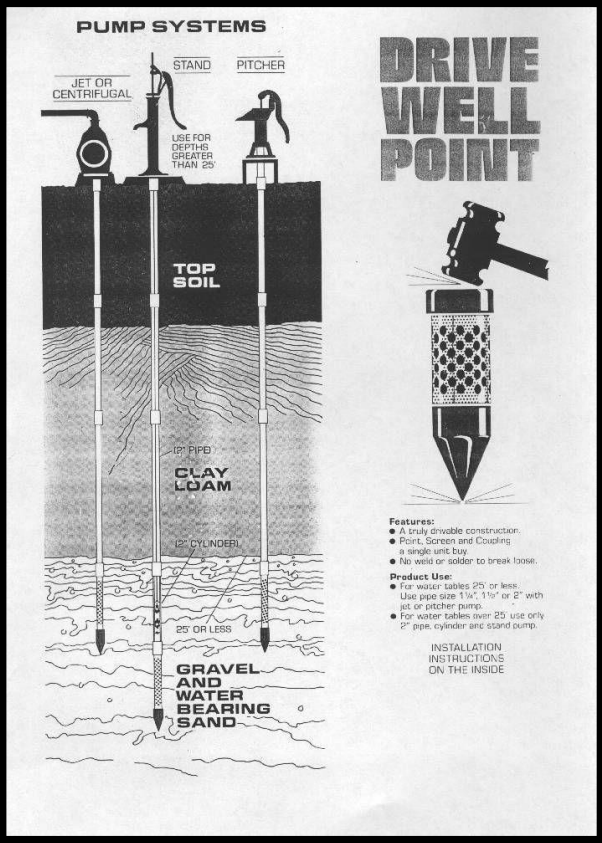
He discovered that one of the piston connecting rod pins was rubbing on the cylinder wall. It made a crease for oil to enter the combustion chamber, causing smoke. It was easy to correct the pin issue, but now the cylinder was scared. He was able to grind out the cylinder and install a sleeve.

➔I did not spend much time at the farm anymore, going to college and only home on weekends. Not sure why, but dad decided to sell the farm and move to a smaller property. The Trout farm owner from across the road offered him $17,500. I guess he thought that was a good deal.

The Langenfeld's rented out the house for a couple years, then decided it was more trouble that it was worth, so they let the Plymouth fire department practice with new firefighting methods. They would start the house on fire and then practice putting out the fire. They experimented with injecting foam into be basement etc.

The new place was about 6 miles away, near Winooski school was 3 bedrooms, no bathroom, only about an acre, and did not have plumbing. It had a cistern with a hand pump in the kitchen. Rain water from the roof would drain into the cistern (a large cement tank under the kitchen floor).

He tried to drive a sand point in the basement for water, but was unsuccessfull.



They would get drinking water from the neighbor.

Across the road and a little East, was a cemetery

About a ¼ mile down the road (hyw U) was the Winooski school.

➔My uncle Bob Rentmeester and family (Aunt Peggy and 7 daughters) moved to a farm a few miles from Spring Farm (lower left on above map).

Uncle Bob hired me to help with the grain harvest. I rode on the combine and tied the

gunny sack bags of oats and let them slide to the ground as we mowed the field.

1960, October, Allis Chalmers

Started work for Allis Chalmers on October 3, 1960.

It was by chance, after applying for a job at Harnischfeger corporation, while driving past Allis Chalmers, there happened to be a parking spot near the entrance. I stopped and applied for a job. I had kind of an attitude, not really expecting much, expecting to hear from Harnischfeger.

Got interviewed on the spot and started work the following Monday. $3.75 per hour plus benefits.

Rented an apartment a couple blocks away. It had a porch and a room with a bed on the first level, and a kitchen and bathroom downstairs. I think it rented for $75/mo.

Spent 3 months as a technical trainee where I learned about Allis Chalmers, and they learned my abilities. Starting the new year (1961), I became an operator for a large digital computer (at the time). An IBM 704.

The IBM 704 was IBM's first commercially successful vacuum tube scientific mainframe (built at a time when computers for scientific and business computing used separate instruction sets). It was announced in May, 1954; 136 were sold.

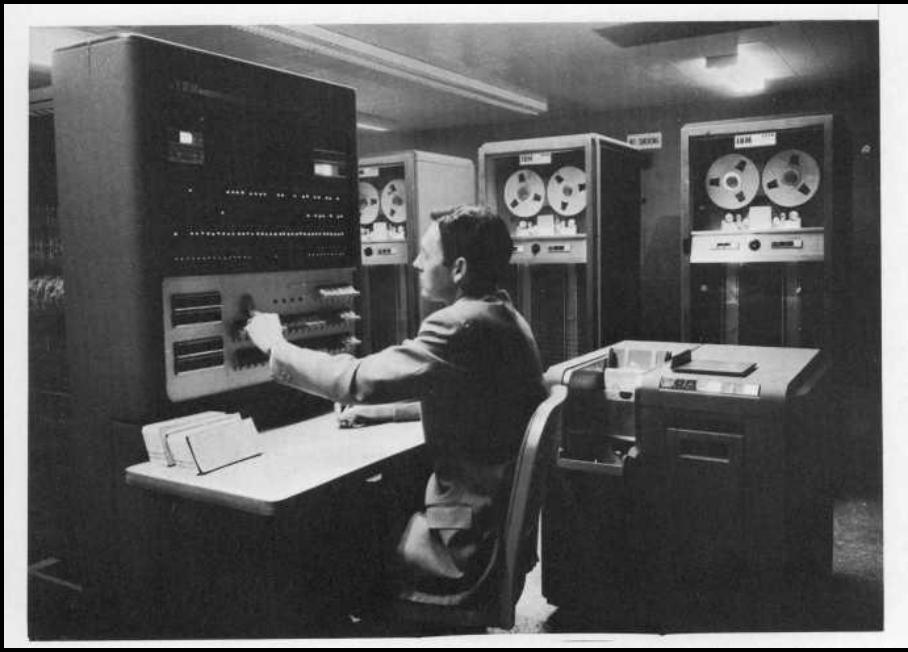
The major advances included core memory, and support for floating point in hardware (supposedly the first mass-produced machine to do so).

FORTRAN was produced for, and first implemented on, this computer. LISP was also first done on the 704.

Our 704 contained 8k (36 bit memory words) of core memory, 8k of drum memory, 6 magnetic tape drives, a printer, and a card reader.

Being a vacuum-tube machine (over 4,000) It had a mean time between failure of around 8 hours. We had onsite IBM repair persons to service outages.

Picture is an example. See Appendix A for portion of Manual of Operation.



It was my job to run computer programs submitted by engineers. They would submit source code for compilations and or other input data. Input was in the form of punched cards (80 column).

It was up to me to load and run the required program. Some applications used magnetic tape. The tape reels were stored in a tape storage room. A printer was used for reports and error messages. Some errors I could correct and rerun. Sometimes the computer would crash and require recovery procedures. Completed applications required packaging of the results and mailing back to the user.

As time went on, I learned how to better help and improve results. I would recognize simple source code errors, make corrections, and rerun, avoiding a day's delay for the user. Users started relying on my help and started requesting additional testing steps. Typically, when a test program would crash, the user wanted to know things like failing instruction address, status of sense light etc. Eventually I designed a little self-loading program which booted itself while saving critical status information and printed the wanted information on the printer rather than manually recording. That was a hit, then I developed a tracing routine which simulated actual program instructions. This allowed a printout of the instructions preceding a programming problem. Years later this tracing approach was expanded into most programming systems.

My boss decided I should be programming rather than operating. I learned the Fortran language and began converting existing instruction level engineering programs to Fortran so they could later be used on newer computers.

During lunch break we would get together in a conference room and play Sheepshead. Sheepshead is most commonly played in Wisconsin where it is called the "unofficial" state card game. In 1983, it was declared the official card game of the city of Milwaukee.

Sheepshead is played with 7-8-9-10-J-Q-K-A in four suits, for a total of 32 cards. Sheepshead is most played by five players. Although tournament play is 3 handed.

We would play for a nickel a point, keeping score until payday (once a month). Points were based upon the degree of success for each hand.

🡐 perfect “grandma hand”

1961, FEBRUARY, MARRIED

Married grade schoolgirl friend. Mary Szépe, she lived across the road. It was a small wedding at St Emerick in Milwaukee. Feb 4, 1961

Miss Mary Szepe Repeats Vows With John Wolever

St. Emeric's Catholic Church in Milwaukee was the scene Saturday morning for the 9 o'clock ceremony in which Miss Mary Szepe was the bride of John Wolever of Milwaukee, the bridegroom. They are the daughter of Mr. and Mrs. Stephen Szepe, Plymouth, and son of Harry Wolever of the same city.

The celebrant of the nuptial Mass was the Rev. Ipoly Ferenczy.

A waltz-length gown of taffeta, lace and tulle was worn by the bride. The design included long, pointed sleeves and a scoop neckline with white pearls as decoration. The veil of silk illusion was attached to a crown of pearls. White roses and carnations were combined in the bridal bouquet.

As maid of honor, Miss Elizabeth Szepe, the bride's sister, chose a pink street-length dress with matching headpiece. The floral arrangement she carried was made of pink roses and white carnations.

Martin Buckman, a former resident of Plymouth, had the role of best man for his brother-in-law.

After the church service, a reception was held in the church parlor. The family had a wedding supper at the Alpine Village in Thiensville.

Both the bride and bridegroom were graduated from Plymouth High School. She is a registered dental nurse and her husband is employed as an engineer at Allis Chalmers in Milwaukee.

After spending their honeymoon in the West, the Wolevers will live in Milwaukee.

Mrs. John Wolever

Marty Buckman (brother-in-law) was best man (on my right).

Liz Semo (Mary's sister) was bridesmaid.

Following the reception, we departed on our honeymoon destination – Yellowstone national park.

There was no internet to research the park. We got within 35 miles of the park and were told that it was closed until Spring. Oh well, we had a nice trip, not much traffic,

plenty of motel vacancies. The weather was good, but a little cold. We got delayed one day waiting for some road maintenance related to a tunnel. Had to sit in the car for probably an hour. We traveled in the 1951 Pontiac, no issues.

Turned 90,000 miles.

➔Mary had a car that she got from her father. A 1956 Willis.

We did not need a second car, and we were making a lot of trips between West Allis and the trout farm where her folks lived.

Decided to trade both the 1956 Willis and the 1951 Pontiac for a 1960 Rambler (light colored car on left).

This was a big mistake; the Rambler was a lemon. It was in the garage every other week. Even had the engine rings replaced because it was using a quart of oil on 200 mile trip. A good thing it was on warranty.

➔Reminds me of an interesting car that belonged to Mary's uncle, Father Lacibacsi Szépe. He was working at St. Coletta in Jefferson.

Rose Marie "Rosemary" Kennedy (September 13, 1918 – January 7, 2005) was the oldest daughter born to Joseph P. Kennedy Sr. She was a sister of John F. Kennedy president, Senators Robert F Kennedy and Ted Kennedy. Her father arranged a prefrontal lobotomy on his daughter Rose Marie in 1941 when she was 23 years of age.

The procedure failed, leaving her permanently incapacitated and rendering her unable to speak intelligibly. She spent most of the rest of her life being cared for at St. Coletta.

Rose had a 1950 Oldsmobile coupe, but no longer used it. Mary's uncle purchased it in 1953.

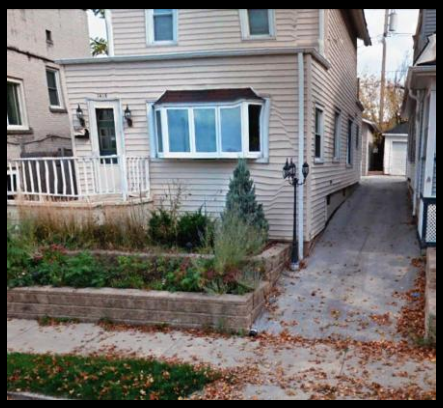
1961, October, Daughter Born

My daughter, Cathy born at the Plymouth hospital, October 12, 1961.

It was a difficult birth resulting in a C-section and multiple day stay.

Then we found out that the company provided health insurance did not cover the maternity hospital expense. In the fine print it stated that maternity was not covered until 1 year after wife was added. The hospital bill was $583. I paid the $83 and they accepted $50/mo payments.

When Cathy arrived, we needed to find a larger apartment. I found a cheap place within walking distance of work (6 blocks).

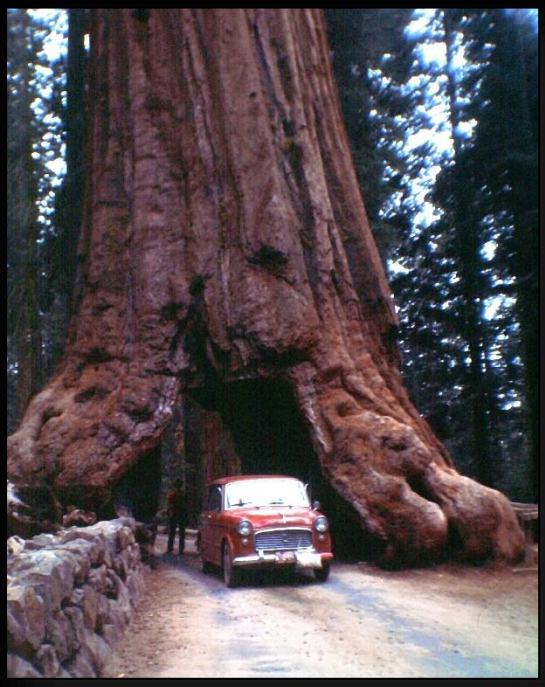


It was across from the Wisconsin state fairgrounds. We shared the bathroom with the landlord.

➔After the warranty expired on the Rambler, decided to trade again. The next car was a red 1962.

4 door, 4 cylinder, 5 speed manual transmission. Averaged 30 mpg. Made a trip to the West coast over 10 days, 5,000 miles on $50 gas ($.30/gal).

Redwood National Park.



➔Made a trip to visit Clem and family in Washington. Took the trans Canadian highway West.

Puyallup Washington (L to R) Ken Wolever, Mary Wolever, Clem Wolever, Liz Szépe, Grace Wolever, Stan Wolever Cathy Wolever holding cat.

1964, JANUARY, SON BORN

Son Robert, born at Plymouth hospital, January 31, 1964

Again, we needed a larger place to live, now a family of 4.

I found an affordable small house for rent, about 4 miles from work. It had 1 bedroom 1 bathroom, about 600 sf with attic loft, basement and 1 car garage. ($165/mo?)

Bob, Judy (sister), Jerry Shutta, Mary, Liz and?

For the first time it was required that I drive to work. The big parking lot was a few blocks from where I worked. After several months I joined a driving pool. There were 3 of us, so I drove every third day. One of the drivers was a big shot so he had a parking pass to a handy little parking lot right outside the building where I worked.

➔The red Fiat had about 60,000 miles, it was a very reliable car until one day I was changing the air filter and lost the wing nut. Apparently, it fell in the carburetor. The engine started knocking. I took the car back to the dealer where I bought it and traded for a similar 1964 blue Fiat (plus $500).

Not many pictures of the blue Fiat, this one shows all the stuff we carried on a trip.

➔I remember many summers when we went fishing and camping on the Minong Flowage. Uncle John would take us fishing in his boat. He taught us how to trowel for the Walleyes and Northern Pike and use a cane pole for catching Blue Gills and Crappies. Many enjoyable hours on the water.

In my later years I lost interest in torturing bait and fish just for fun.

Larry Semo, Bob and Cathy Wolever ➔

Minong Flowage.

John Semo, Mary Wolever, Liz Semo, Bob Wolever, Larry Semo and Cathy Wolever

John did all the fish cleaning.

➔

John also showed us how to use a raft. I remember trips down the St Croix river. Sometimes had to use Band-Aids to fix leaks in the raft. Could not find a raft picture with John.

Me and the boys.

1966, February, First Home Purchase

Columbia Blvd., Brookfield, WI Feb 1966

Not really interested in buying a home, but my Allis-Chalmers office secretary recently got her Real estate license and was looking for a customer. She explained the benefits and options. Eventually I agreed to go look at a house in Brookfield. It was listed for $18,900. We made an offer of $15,000, and eventually agreed on $17,500. Dad contributed $1,500 toward the $3,500 down payment. It had 3 bedrooms, 1 bathroom, 1,575 sf, with two car garage taking up half of the basement. About half an acre lot.

Liz and John Semo helped us paint the bedrooms the night before the move. I rented a U-Haul truck the next morning and the move was on. The Hartman's (Elizabeth and John) from Sheboygan Falls arrived to help. It was a cold windy day. It was about 4:30 when we completed the final load.

On the way back from returning the U-Haul truck we (the 3 John's) stopped at a bar. We ordered some drinks. A shot of Brandy sounded appropriate. They were 30 cents apiece, so one of us would buy a round and there would be a dime left. After 3 rounds each (9 shots) we each had 3 dimes left, just enough for another round. By that time, we were feeling no pain, played some pool, eat some bar snacks. Then the bar tender gave us a free round and each of us bought one more round of Brandy (up to 14).

Finally drove home and laid down on the newly fixed bed to rest. John Semo drove back to his family and they drank beer and partied. John Hartman got sick and was throwing up in the bathroom. I passed out and got sick and vomited in the bed.

Cathy and Bob

➔We cut down some willow tree branches at

the Trout farm (from Italy) and stuck them in the ground at our new place. They immediately took root and leafed out into trees.

This is the only picture I could find of the trees (behind Cathy and Bob with their new bicycles).

Rare visit. Uncle Bill, sister Judy, Father Harry, and me.

Also Mary, and Jerry

➔Bought two Volkswagen's, one for a good engine, the other for good body. Exchanged engines and sold for a small profit.

➔Overhauled engine on Opel station wagon. Replaced crankshaft, bearings rings. It ran but had a slight engine knock. Tried adding a quart of miracle engine fix to oil, took it for a test drive and engine seized up. Called around and found a used replacement engine. It was delivered (exchanged), to our house and I was able to install it from our garage.

➔Purchased a 1958 Nash from cousin. Drove it for a few months and sold it again (ugly car).

1970 ish, I got transferred to another department

When the leased IBM 704 computer ($35,000/mo) was replaced at a different building with the purchased one ($750,000). The new department was business oriented vs engineering. I got involved with converting tab machine wired board functions to COBOL programs so they could run on the new IBM 1410. Plus dealing with the operation of the replacement IBM 704.

One of my supervisors volunteered support for some local large school, I don't remember the name. They had an idea that the computer could assist in planning class scheduling. They gave me a basic scheduling conflict algorithm and asked if I could write a Fortran program for them. Working as fill-in while performing duties as the 704 computer operator, I coded a Fortran program and showed them the result of a test set of student curriculum requests. The only problem was it needed a large array to support the required number of students. Our 704 only had 8k of core memory.

My boss was able to convince the right people at the university of Wisconsin in Madison to let us use their IBM 704 computer which had 32K of core memory. So we made a trip to Madison on off hours to run my new school scheduling conflicts program on the MURA computer. The Midwestern Universities Research Association (MURA) from its beginnings in 1953 to its demise in 1973, leading to the formation of the Argonne Universities Association.

Although the experience was helpful for future programming advancement, it was not part of my Allis Chalmers official duties, I wasn't even compensated for the expense of driving to Madison.

➔I had to get security clearance to be able run the classified nuclear Pathfinder project software.

See appendix B for more on the Pathfinder nuclear power plant.

A newer second generation (use of transistors) computer (Honeywell H200) arrived. Introduced to compete with IBM's 1401 and 1410.

Honeywell H200

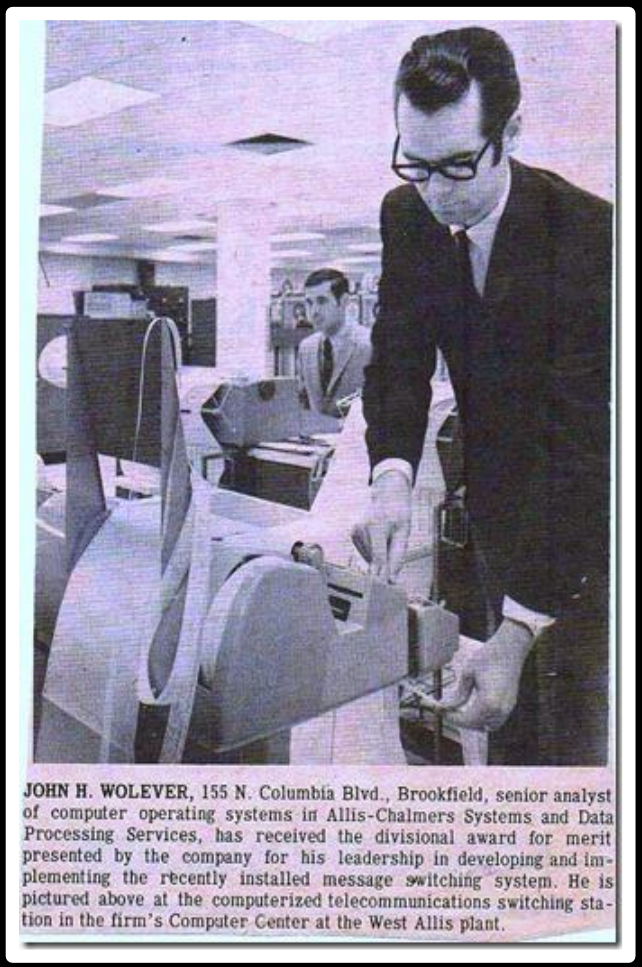
IBM 1401

The H200 was two or three times faster and, with software support, most of the time can execute IBM 1401 (used to replace the IBM 650 computer and tabulator machines) programs without need for their recompilation or reassembly. I was given the task of designing, coding and implementing a system for automating batch processing. Rather than an operator loading and executing one job at a time, multiple jobs were pre-loaded onto magnetic tape. The tape was then processed running consecutive jobs without operator action.

Soon another generation of IBM computers became available to replace the Honeywell H200 and IBM 704, the IBM 360.

System/360 introduced IBM's Solid Logic Technology (SLT), which packed transistors onto circuit cards, replacing vacuum tubes (like IBM 650 and 704) allowing more powerful but smaller computers and much more reliable. It eventually replaced the 704 and the smaller business machines (1401's, 1410, H200)

Then I was assigned a project of converting the teletype torn tape message switching system to an automatic polling dial system using normal voice lines.



JOHN H. WOLEVER, 155 N. Columbia Blvd., Brookfield, senior analyst of computer operating systems in Allis-Chalmers Systems and Data Processing Services, has received the divisional award for merit presented by the company for his leadership in developing and implementing the recently installed message switching system. He is pictured above at the computerized telecommunications switching station in the firm's Computer Center at the West Allis plant.

The Email system of the times. This is how the Allis Chalmers branches, and subordinate divisions communicated and recorded messages.

Rather than wait for snail mail, users would prepare a handwritten message, have it typed to teletype punched paper tape and fed into my new DART system (Data Via Remote Terminals). The punched paper tape (a roll about an inch wide, usually 2-4 feet long) was read when the mainframe computer (S/360) dialed the teletype machine. The computer used 10 dialup lines to systematically dial each of the teletype machines in our private nationwide network (maybe half of the 1,200 branches and many regional and division offices) to send and receive the messages.

Each time the computer called a teletype machine it would first send queued messages (print), then read any messages positioned in the paper tape reader. From the time a handwritten message was dropped off it was key punched, picked up by DART and delivered within an hour or so.

I did the development, testing and maintenance of the DART system. I had to learn the S/360 operating system, Autocoder assembly language, the QTAM (Queued Telecommunication Access Method), and AT&T telephone equipment. I worked with IBM analysts and attended classes at several IBM centers. After a year or so the DART effort settled down and I got involved with installation and maintenance of mainframe system software.

I got assigned to develop and modify internal IBM S/360 code. The Allis Chalmers “bean counters” wanted to charge the computer users based upon resources used. Not just how long a job would run, but how much memory, CPU and I/O resources were used. This took a lot of investigation and modification to IBM code. I was sent to Houston to learn the internals of HASP (Houston Automatic Spooling Program). Worked with IBM analysts to obtain microfiche of internal IBM code. Then developed patches to provide access at strategic events for effecting the “bean counting:” needs.

This was a never-ending battle caused by constant IBM upgrades, features, devices and new mainframe computers.

➔Purchased a 1963 MG midget ($300). It was in rough shape. I repainted it, gave it a new top, mats, new light lens, front wheel bearing, tune up.

Drove it for a few weeks for fun and then ran an ad to sell it for best offer. Had a couple guys come to look and made offers. The guy with the best story of just returned from military service etc. got the car ($1.250).

➔The family is getting bigger, outgrowing the Fiat. Traded the 1964 Fiat for a 1964 Comet station wagon. On the first trip South, the rear end went out. Replaced with a used one from a junk yard.

➔Traded the 1964 Comet for a brand new yellow 1968 Pontiac Tempest. OHC 6 cylinder automatic transmission. The first car that had mandatory seatbelts.

Made a trip out West. Drove up on top of Pikes Peak.

Then headed for the HemisFair in San Antonia TX. **HemisFair '68** was the official 1968 World's Fair (or International Exposition) held in San Antonio, Texas from April 6 through October 6, 1968.

I remember taking Cathy and Bob to the restaurant atop the needle and ordering the largest shrimp I have ever seen (3-4 inches?).

➔Purchased a 12 foot Mallard travel trailer.

Our first trip towing a trailer was to Florida. At the first rest stop I discovered that the refrigerator door in the trailer had opened, and everything was dumped on the floor. Milk, mixed with orange juice, eggs, what a mess. The trailer did not have a bathroom, but rather a potable camping toilet.

After the trip to Florida, I traded the Mallard for a 16 foot 1965 Air stream travel trailer. It was nice, a little small but had everything including a bathroom.

➔On one of the trips down south we had a broken axle on the trailer. On our way back, a few miles from a target campground near Indianapolis Indiana I was making a turn onto a local road and the trailer wheel struck a pothole and snapped the axle. I had to disconnect the trailer to go and find a place to call for towing service. Within a hour a guy came and loaded the trailer on a flatbed truck and delivered it to the campground where we had a reservation.

I called the Airstream service place in Indianapolis, and they reported that they did not have an axle and it would take a few days to order one. This was Thursday, so It appeared that we were stuck for the weekend, and I was scheduled to be back to work on Monday. The place where they make Airstreams and supply parts was in Jackson Center Ohio about a 3 hour drive. We left about 4:30 the next morning (Friday), got to Jackson Center and purchased an axle assembly. When we got back to the campground, I called the Airstream place to come out and replace the axle assembly.

They came out Saturday morning and installed the new axle. When they were done the wheels did not fit, the replacement assembly was for 5 lug bolts wheels rather than 6. I followed the repair guys back to their service department and purchased two new wheels. Came back and took the old trailer wheels to a serviced station to have the tires remounted on the new wheels. Almost completed with the second tire when the gas station attendant collapsed. I had to call his daughter to come to his aid. I was able to complete the mounting of the second tire myself. Took the new mounted wheels back to the trailer at the campground only to discover that the lug nuts were a different size.

Off to an auto parts place and purchased a box of 10 lug nuts. Finally mounted the first wheel, on the left side, only to discover that the new lug nuts did not work on the right side wheel. all the nuts were left hand thread. Luckily, the lug nuts on the Tempest were a match, I borrowed one nut from each of the 4 car wheels to successfully mount the right side trailer wheel. We then left the campground and drove to the Airstream place where they checked it out and adjusted the brakes. We drove a few hours and found one more campground, got home Sunday afternoon in time to go back to work the next day.

→Attended local Air Stream rallies

Traded Pontiac Tempest for a 1972 Pontiac Catalina. It had about 3,000 miles, was used at the Greater Milwaukee Golf Open to transfer guests from the airport.

Boseman Montana International Air Stream rally in 1973. At the Montana State

University.

Over 4,000 trailers, all with electric and water hookup.

During the trip, there was a flat tire on the Catalina. Radial tire had become available, so I purchased 4 new ones.

➔Traveled to South Dakota to an Air stream club members home for pheasant hunting. We drove around the fields standing on the deck of a pickup truck. Several hunters at a time waiting for a pheasant to fly up. I was using my fathers-in-law smooth bore 20 gauge Sour shotgun. I had 6-8 opportunities and missed them all. It was a little scary when one of the shotguns went off by accident while we were driving around in the truck.

I guess they felt sorry for me not getting any birds. At the end of the day, they donated about 6 dead rosters.

Bob, friend, and me.

➔I do not remember exactly when Bill and Lorna Rentmeester were with us at Mirror Lake State park. My brother-in-law John Semo was the park manager. A bunch of us were swimming in the lake. I was quite a way out when I discovered that I could not touch the bottom. I started to panic and was flailing with my arms and not making any progress. Bill was not a great swimmer but came to my help and gave me a push.

➔I was one of the original 50 founders of Air Stream campground near Waupaca, WI. Helped build the clubhouse, enjoyed sweat corn roast events. Big stink when I accidentally rose U.S. flag upside down at our camp site. Conflict over the event eventually lead to decision not to contribute additional funds for expansion of sewer and water facilities, eventual abandonment, and forfeiture of ownership share. Years later facility was taken over by Fountain Lake Park, http://fountainlakervpark.webplus.net/

Corn roast (see Bob and Mary)

➔Toronto trip with Sue and Chuck.

Six of us in the Tempest (me, Mary, Sue, Chuck, Cathy and Bob). We used the Clipper ferry boat to cross lake Michigan.

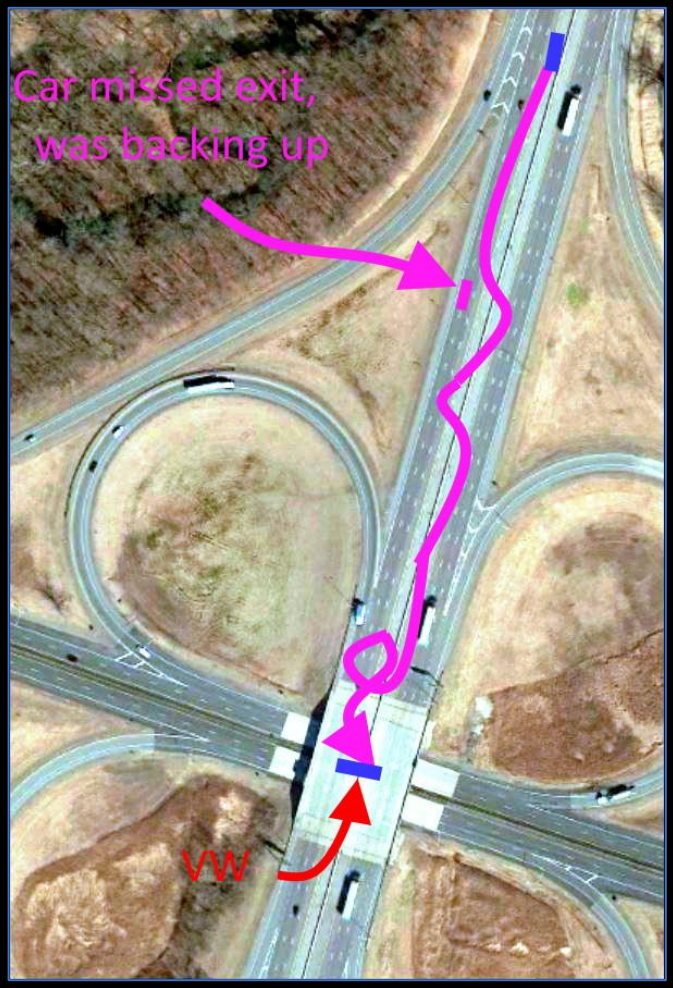
Toured Niagara Falls

Enjoyed the hotel in Toronto while I attended some meetings.

On the way home we stopped at a place in Michigan where Lacibacsi was staying. He asked us to drive his Volkswagen back to Plymouth.

On the way back, after stopping for lunch, I handed the keys to Chuck. Probably an hour later we were approaching Michigan City Indiana, tooling along at 65-70 mph on an interstate, and I looked up to see a car ahead of us backing up because they missed the exit.

I yelled to Chuck (was half asleep) just in time for him to jerk the VW left and avoid the car in our lane. Problem is, he over steered to correct, and VW went into a skid and rolled over. We bounced off the guard rail avoiding a 30-foot drop to the highway below and ended up back on the wheels.



I escaped with minor bruising, no seat belts, and was hanging onto ceiling hand grip. Chuck injured his left elbow as we spun around with his side on the concrete. He was treated at the Michigan City hospital and released the next morning. I called Lois and talked to Marty to give her the news.

Mary, Sue, Lacibacsi and the kids made it all the way home to Brookfield. Marty was waiting for them and relayed the news. Mary and Sue immediately got back in the Tempest and drove back to Michigan City (160 miles) to give us a ride home. The VW was totaled.

1974, JUNE, MOVE TO WAUKESHA

Ranch style lannon stone home had a flat roof. Not good for a snowy climate. Rather than try to fix roof leaks, decided to upgrade to a hip roof. Hired contractor to add frame and plywood. I applied the shingles (40 squares).

The basement was reinforced as a bomb shelter with access from outside steps. Added stairway access to basement from upstairs bedroom. Converted the bomb shelter area to a man cave.

Added a pool table and refrigerator for tap beer.

The furnace and water heater occupied another area with access to the cave. The cave being an area that was originally crawl space for the rest of the house. Some of the ground had been removed leaving a space with dirt floor. I worked on removing more dirt, probably doubled the usable area over a few years.

The property had an abandoned in ground pool made from cement blocks. I cleaned it up and with the help of my mother-in-law and family resurfaced with fiberglass.

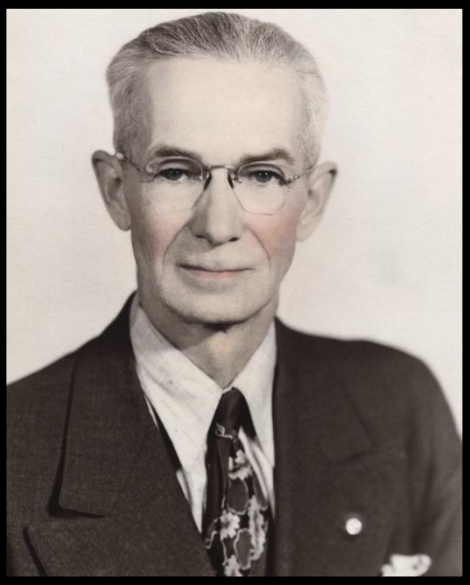
➔Purchased 1966 Plymouth Belvedere from associate at work. Drove it for maybe a year and sold it to Mary's friend Norma's daughter. It ran ok, no major issues, just didn't like the looks.

➔Decided to trade the 16 foot Air Stream for a 26 foot Air Stream.

Then attended the international rally in Notre Dame Indiana in 1974

The last international rally we attended was in Louisville KY 1976

1974, NOVEMBER 13, DAD PASSED AWAY



December 8, 1894, to November 13, 1974

He had been staying with my sister Lois in West Bend, for several years along with his brother Willis. He had problems with emphysema. I remember visiting him at the West Bend hospital a few days earlier and he said, “I made it to 80”.

Actually, his birthday was still a month away.

He was buried at a little cemetery that was across the road at his former residence (Winooski WI).

He was active in the VFW (Veterans of Foreign Wars), American Legion. This was a ceremony at the grave site.

➔When Cathy turned 16, she needed a car. She turned down my first find, then I found this 1967 Javelin.

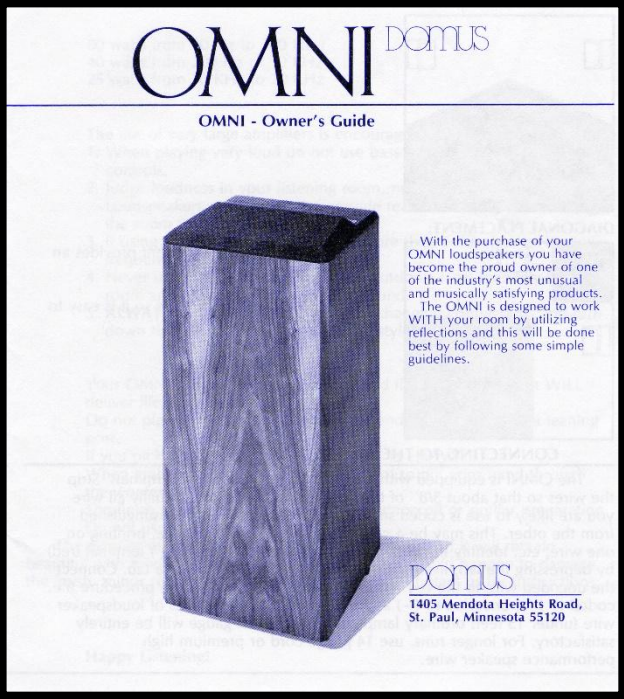
➔Purchased runabout from Allis-Chalmers associate.

Used on local lakes, Lake Winnebago once, Lake Michigan a few times. Added fishing equipment for deep water trout trolling. Had fun with Bob, never caught much.

I remember taking Uncle Burt along for a boat ride on Long lake. He was quite old and when I returned him to his home, Aunt Olga complained that I kept him out too long. He was fine, enjoyed the trip.

➔Purchased a set of speakers to upgrade our Hi-Fi system. (11/23/83). Found a pair of Domis Omni high end rare design with woofers pointing down and tweeter pointing up. Very heavy walnut. 100 watts. The pair was on sale as demos for $550. The original price was $1,500 for a pair.

Each speaker weighs nearly a 100 pounds. Casters are provided to aid in the ease of handling. Serial numbers 1068 & 1078.


OMNI DOMUS

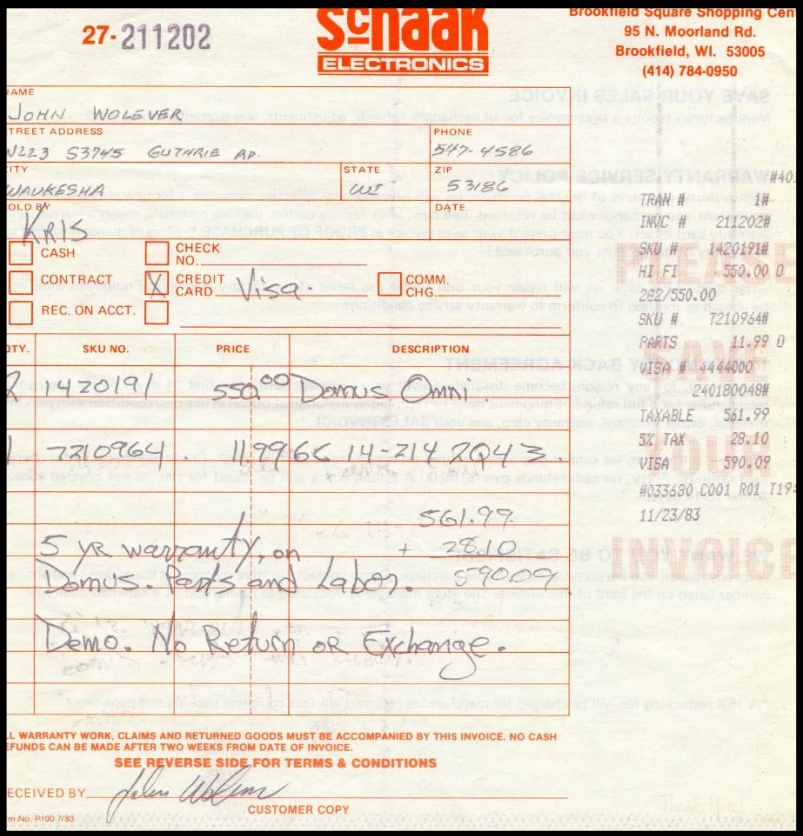
OMNI - Owner's Guide

With the purchase of your OMNI loudspeakers you have become the proud owner of one of the industry's most unusual and musically satisfying products. The OMNI is designed to work WITH your room by utilizing reflections and this will be done best by following some simple guidelines.

DOMUS

1405 Mendota Heights Road,
St. Paul, Minnesota 55120

I see ads for used ones asking $1,500 after 35 years.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QTY.	SKU NO.	PRICE	DESCRIPTION
2	1420191	550.00	Domus Omni.
1	7210964	11.99	6 14-214 2Q43.
			561.99
			+ 28.10
			590.09
	5 yr warranty, on Domus. Parts and Labor.		
	Demo. No Return or Exchange.		

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INVC # 211202#
SKU # 1420191#
HI FI 550.00 0
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PARTS 11.99 0
VISA # 4444000
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TAXABLE 561.99
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VISA 590.09
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11/23/83

L WARRANTY WORK, CLAIMS AND RETURNED GOODS MUST BE ACCOMPANIED BY THIS INVOICE. NO CASH EFUNDS CAN BE MADE AFTER TWO WEEKS FROM DATE OF INVOICE.

SEE REVERSE SIDE FOR TERMS & CONDITIONS

ECEIVED BY John Wolever

CUSTOMER COPY

m No. P100 7/83

➔Purchased 1978 GMC truck. Catalina was piling up the miles, thinking a pickup truck would be better for towing the Airstream trailer.

It turned out to be weaker with 350 ci V8, vs 400 ci V8 of the Catalina.

I added benches and foam cushions in the bed.

I remember hauling 12 people to see the Poynette game farm.

➔Did some bicycling.

Elroy-Sparta State Trail

With three rock tunnels and five small towns along its 32.5-mile route, the trail is a favorite Wisconsin bicycling destination. Traveling between Sparta and Elroy, the trail stretches through the communities of Norwalk, Wilton and Kendall, passing by wetlands, prairies, farmland and unglaciated areas.

Three railroad tunnels highlight the trail which are each over 140 years old. The tunnels near Kendall and Wilton are each about 0.25 miles long. The tunnel between Norwalk and Sparta is 0.75 miles long. The tunnels are dark and cool, even on the brightest days and water from springs above the tunnels can trickle onto the trail.

➔Rentmeester family reunions.

Held at Parnell Wisconsin, not far from St Michaels church and cemetery.

1983, February, Joined JCPenney

Left Allis-Chalmers and joined JCPenney February 14 (Valentine's day). Headhunters were calling me at Allis-Chalmers when it was clear that the company was in trouble. The company began to struggle in the 1980s in a climate of rapid economic change. It was forced amid financial struggles to sell major business lines.

Allis-Chalmers purchased Simplicity the company in 1965, and Simplicity's management bought it back in 1983.

1985 was a year of great dissolution for Allis-Chalmers—the year when it folded three of its main business lines:

The Fiat-Allis joint venture in construction equipment, over which the firms' managements had long since had a falling-out, ended when Fiat bought out Allis's remaining minority stake. It renamed the company Fiatallis.

The Allis-Chalmers farm equipment business line ended when Allis sold it to K-H-D (Klöckner-Humboldt-Deutz, Deutz AG) of Germany, at the time the owner of Deutz-Fahr. K-H-D renamed the business as Deutz-Allis[40] and discarded the Allis Chalmers 8000 Series tractors and Persian Orange branding in favor of spring green tractors built by White Farm Equipment with Deutz air cooled engines.

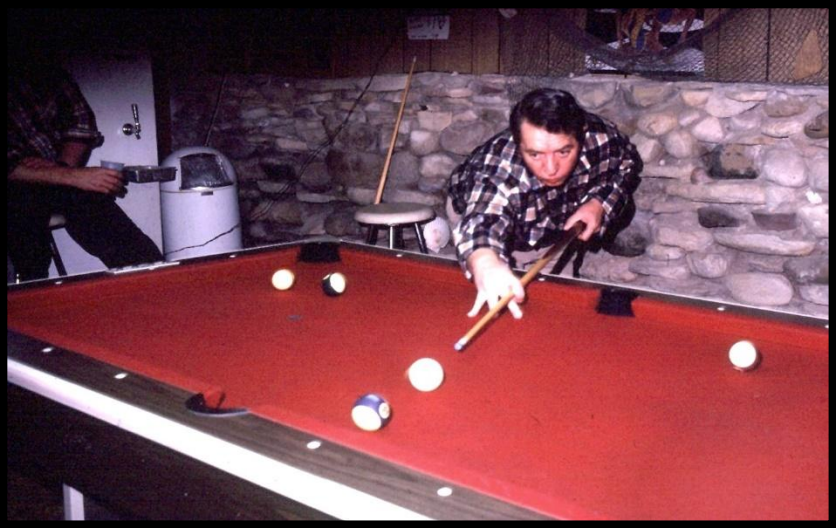
The Siemens-Allis joint venture in electrical controls ended when Siemens bought out Allis's remaining minority stake. Siemens then blended the company into the Siemens Energy and Automation division.

The word was out that I had experience with internal IBM system operating systems. I interviewed with General Electric and JCPenney. I didn't like the office conditions at GE because of the annoying background music. JCPenney suggested that there may be opportunity to transfer to Atlanta. Mary was happy about the idea of moving South (and Laci was excited). I was offered $5,000 more than I was making plus 4 weeks' vacation. I didn't hassle, a few years later the boss that hired me said he would have gone much higher. Money was never a big issue with me. I was happy to be paid for playing with the computer.

➔Leaned to roller skate. The Rollaero Skate Center in Cudahy. Opened 1979, featuring maple floors, live organ music, adult skating lessons.

Also learned to square dance about 1980. Introduced to clogging at a square dance exhibition in Milwaukee. Participated in exhibitions, Wisconsin - square dance convention, Texas - state fair and wedding, Missouri - clogging convention, parade in Texas, practice at Georgia, Texas, Arizona, and once in San Diego.

➔Played pool in downstairs bomb shelter with neighbor across the street (Tony Birch).



We also attended several Badger football games at Camp Randal. Took a chartered school bus. Lots of drinking and card playing.

And did a lot of crappie fishing at Lower Nemahbin Lake.

➔Did some work at Burch's new cabin at Coloma WI. Bob and I spent a few weekends. While Bob was hunting squirrels, I worked on the cabin. I installed electric wiring, lights, receptacles, switches one week. Then came back another week and installed wiring for the well.

➔Performed engine maintenance on 1972 Pontiac Catalina. Mileage was getting up there, approaching 200,000. I was concerned about the timing chain wearing out and valves needing attention.

This was in the days when leaded gas was used. The lead served as a lubricant for the valves. After leaded gas was made illegal, the engine manufactures were forced to use more expensive valve and valve seat material. Since then valves have not been an issue.

I took it apart, replaced the timing chain and took the head's in for refurbishing. I didn't do a good job putting it back together. After a few weeks one of the head gaskets started leaking. Retorqued the head bolts and it was better but continued to weaken power in two cylinders. Later gave Catalina to Cathy and Scott. They drove it for a while and the transmission failed. It was pretty much rusted out and was junked.

➔Bought 1966 Tempest, 4 dr, 6 cyl for Bob when he turned 16 (1980).

I don’t remember what happened, but I had to get a different engine for it. Took it someplace and they exchanged a used engine.

➔Purchased 1983 Pontiac Firebird.

➔The Waukesha house had a little ravine on corner of the property. It was a good place to dump the leaves from the many large trees in the yard. I would routinely burn the leaves. But one day it was quite damp, and they did not burn well. I gave it up and assumed the fire was out.

The next day Mary called me at work and said the fire department was there to put out a fire in the ravine. One of the firemen said someone driving by must have tossed a cigarette. I knew better…..

➔I decided to make a kitchen table. I wanted something sturdy and rustic. This is the only picture I could find. It was taken in Canton GA home with visitors Karen and Ron Kuehn. It was made from 2 x 6 and 2 x 12 pine. I used a torch to burn the surface and then wire brushed the soot, and applied many coats of urethane. Made matching chairs, 3 singles and 1 triple bench all with swivel coaster wheels.

→Went fishing with son Bob at Don Peter's (Allis-Chalmers associate) cabin somewhere in Northern Wisconsin. By the time we got there towing the Airstream, it had started snowing.

The boat at dock the next morning. We spent most of the day playing cards rather than fishing. Learned how to make a group meal from combining hamburger, carrots, potatoes, onions etc. in aluminum and cooking on a campfire.

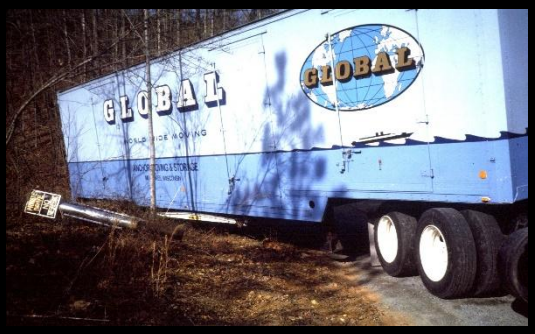
Don Peters had an interesting story about finding a dead corpse in the lake. It had a wooden leg that was sticking out of the water.

1984, MAY, MOVED TO GEORGIA

Moved to Canton Georgia, May 15, 1984. 3br, 1 br, 1,250 sf, lower level garage, not sure about the acreage (3-4?). $137,000?

The driveway was steep gravel.

The moving van could not make it up. The movers had to use a smaller shuttle truck to move the belongings to the house.



I also could not pull the air stream up the driveway. A few days later Bob's new landscaping boss used his 4 x 4 to bring it up the hill.

➔A new boss, two others and I transferred to the JCPenney facility in Atlanta Georgia to start a new software development department. My first assignment was to develop a software distribution system to support the 1,200 store Series/1 computers. Another department in Atlanta maintained and tested the Series/1 software changes.

It was my job to distribute the changes in timely manner to the regional centers at Atlanta Georgia, Columbus Ohio, Lenexa Kansas, and Reno Nevada. From the regional centers the software was distributed to associated stores using existing IBM software. After designing and testing the distribution system, I had to travel to the regional centers to implement and train.

After the HCSC (Honor, Confidence, Service, Cooperation) inauguration, I qualified for company contributions to a 401K. Matching payroll deduction up to 8% in form of JCPenney stock.

➔Traded 1978 GMC truck for something more economical. Daily trip to work at downtown Atlanta was close to 80 miles round trip (mostly Interstate high speed). Needed something more economical and maneuverable. Parking was in multiple level parking building.

Decided on a 1982 Pontiac J2000. 4 cyl, 5 speed manual transmission, 38 mpg.

It was a good gas mileage car, had some issues with the manual shift requiring service a couple times. I drove it for a year and decided it would be safer driving at 75-80 mph with new tires. The next day I got a blowout on one of the new tires.

➔Installed swimming pool and enclosure. With electric powered roof.

Installed solar heating. Salvaged the rubber tube components from a removal/upgrade project being performed by the swimming pool place somewhere in Marietta GA. If you closely on the picture, the white part is 2 inch PVC, and it connects to the rubber tube panels. The PVC connected to the swimming pool filter system. The forced filtration water also circulated thru the collector. It was minimally successful, raising the water temperature about 3 degrees. It only had direct sun light in the morning.

Looking at the picture, I remember remodeling the kitchen and installing the twin windows (above garage door).

The pool enclosure also had a pool table and a space heater.

We had global warming one year back then too (Wisconsin grammar).

➔Decided to replace the J2000 with something more exciting to drive (I was in my mid 40's).

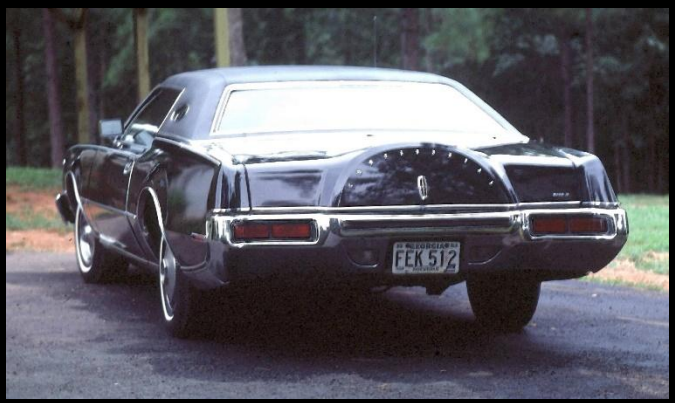
I saw this car setting in the lot at a used car place in Marietta Georgia.

A 1980 Nissan 280ZX 2 door coupe anniversary edition. It had about 45,000 miles. The list price was $4,000. I took a test drive and was hooked. I offered $3,800. The salesman said someone else was interested and he had to wait for his decision. I got a call the next day from the salesman to say it was sold. I was very sad, then the next day the salesman called again and said the buyer could not come up with the money, and I could have it for $3,800.

What a car, it was a joy to drive to work, very good braking and acceleration.

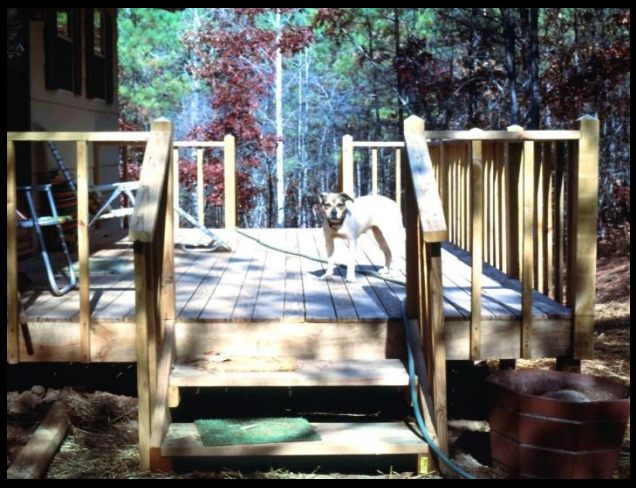
The Pontiac 1982 J2000 was sold to a private party for around $2,500.

➔Just for fun, after seeing an ad for a 1973 Lincoln Mark IV, I purchased for $1,200.

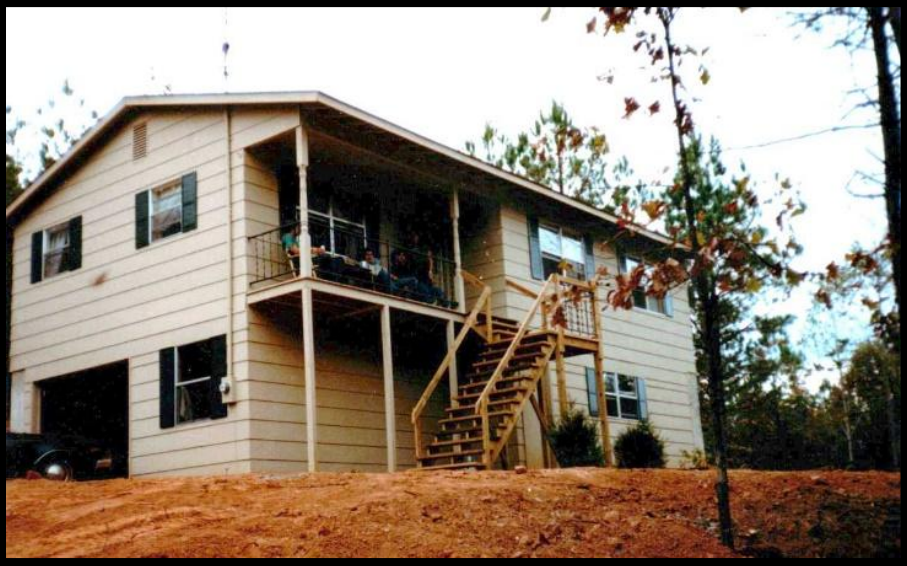


A real gas guzzler, 12 mpg, 200 hp, 460 cui V8. I drove it when we had visitors. After a year or two I ran an ad and sold it for what I paid ($1,200).

➔After Mary's mother completed construction of her new house (built on South end of our property), I added a deck and steps (on the North side).



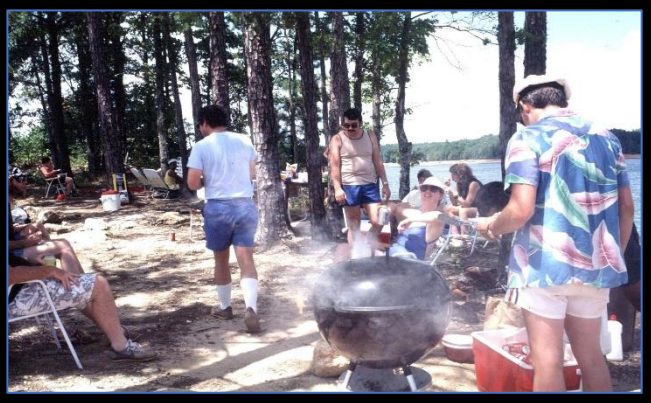
House also had a deck and steps on the South side installed by builder.

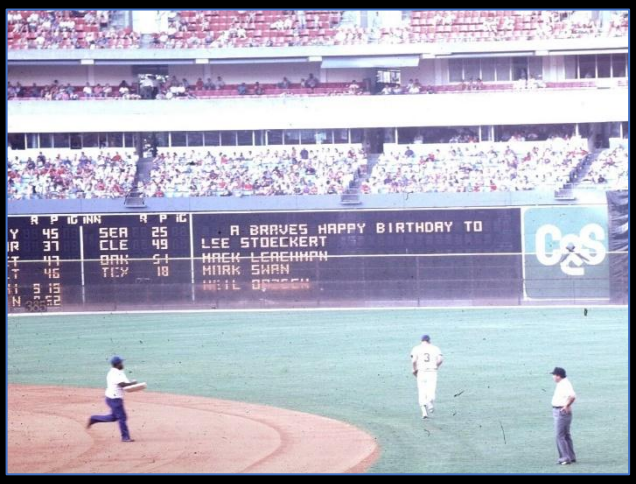


➔Cathy bought us a young Rhea. We soon had to buy another.

➔Used the runabout boat brought along from Waukesha on local Georgia lakes. Bob and I checked out Lake Lanier and a couple times Lake Allatoona. Lanier is the largest lake in Georgia, having nearly 700 miles of shoreline spread over 38,000 acres.

Also Had JCPenney social events at lake Lanier.





➔Other JCPenney events included attending Atlanta Braves games. If you look closely the picture back board shows “HAPPY BIRTHDAY TO LEE STOECKERT”. He was my JCPenney boss, we arranged the display to surprise him.

I used our swimming pool building for a JCPenney party.

1989, October, Moved to Dallas TX

The JCPenney headquarters moved from New York to Plano Texas.

Part of the reorganization relocated the Software development department at Atlanta to a rented office building containing an existing JCPenney computer center. in Dallas.

Computer center and offices where I worked in Dallas.

➔I shared rental of a house about 6 miles away for about a year and a half.

Then moved to a condo within walking distance.

It even had a small garage downstairs.

The internet was just becoming available. Initially the World Wide Web was only available on a local JCP network. The browser by Mosaic was called Netscape Navigator, a couple years later replaced with Microsoft Internet Explorer. The first website dedicated to information about the WWW went live August 6, 1991. We started tinkering with creation and use of local websites for JCP internal use. It was a good place to document things making information available to associates without printing and publishing with paper. Changes could be made online and instantly the effected associates were updated. Email started taking the place of interoffice memos. Soon the internet became available outside of JCP using dialup from PC's.

While this boom was developing, I was primarily responsible for maintaining and supporting the JCPenney Network Data Transfer (NDT) system. Originally developed by my boss prior to his promotion to head of the new Software development department (back in 1984). Its function was to transfer large data files between regional computer centers (Dallas, Columbus, Lenexa, Reno).

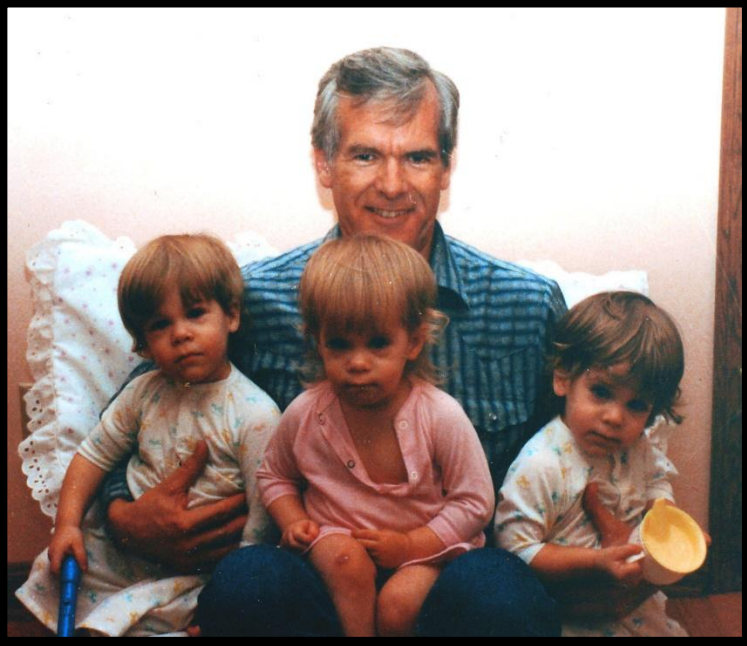
Before the WWW, high speed communication required dedicated telephone lines. The protocol at that time was SNA (Systems Network Architecture) using Microsoft TCAM (TeleComunication Access Method). The application was complicated by scheduling when to send which files, many types of data file formats, concurrent sending and receiving of multiple files communicating with multiple locations and the need for transmission error checking. Input records were converted to transmission blocks with hash sum totals. The receiving end had to recalculate the hash sum to verify transmission accuracy and reconstruct the output data file type. Large files were compresses to optimize transmission time. Since a particular data file could take a long time to transfer, restart capability was necessary. Either the sending mainframe or receiving mainframe could crash, more often a transmission line could fail (or file device could fail) during a long (typically 5-25 minutes) multiple concurrent transmissions.

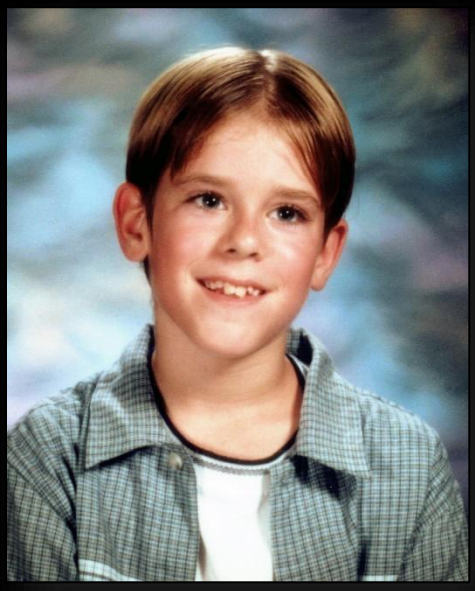
The last about a year prior to retirement, I was involved with Pharmacy conversions. JCPenney had purchased many pharmacy locations each with their own accounting and data record formats. I was writing one time use routines for converting acquired pharmacy data into JCPenney style data. And of course, documenting things to be turned over to my successors.

1989, DECEMBER, GRANDCHILDREN BORN

All 3 came at once (triplets), December 5, 1998. Atlanta Georgia.

Jared, Jessica and Michael





1990, March, Purchased Shady Cove Resort

Purchased Shady Cove resort (Castalian, TN). I was living in Dallas; the plan was to get this business going and then retire in a couple years. I did the books and payroll remotely with several trips. I was hoping Bob would eventually take charge. Hired Tommy Jennings as foreman.

The business was a big mistake, really low class people to deal with, did not know much about running a campground, restaurant, marina business, especially remotely. Bob got married and moved out. Lost $100,000 over 2 years (sold at auction).

Floating store

Added garage ➔

➔On one of my flights to visit Shady Cove Resort from Dallas there was a famous entertainer on board. While I was awaiting boarding the word got around that Dolly Parton was on this flight.

Sure enough I boarded the plane and when passing thru the first class section there she was.

➔I remember another flight from Dallas to Nashville that was a little scary. We were coming in for a landing, probably 50 feet above the landing strip, when pilot decided to abort and pulled the plane back up. Circled around and landed normally.

There was another interesting flight that I recall returning from Youngstown Ohio and stopping at Nashville. I was visiting Cathy and family and wanted to visit Shady Cove before returning to Dallas.

It was a small dual prop plane with maybe 30 passenger capacity. After I got seated on the plane the announcement came over the PA that they were overweight and asking for volunteers to delay their flight and receive a voucher. A couple people exited, and after a considerable delay we took off making use of a long runway. Normally expecting a 20 to 30 thousand foot elevation we managed to maintain only about 5,000 feet. Everyone was concerned, and relieved when we safely landed in Nashville.

1991, JULY, BROTHER CLEM PASSED AWAY

Actually, a half-brother, about a year old when the folks got married. Clem was about 16 years older than me. By the time I could remember things he was already in the Airforce. I remember him coming home on furlough. All dressed up in uniform, he was my hero. Then he got married in New Mexico and later moved to the state of Washington. Retired from the Airforce and worked at Boeing as on airplane mechanic. Died from second heart bypass surgery complications at a little past 66.

The idea that he was not only illegitimate (*born of parents not lawfully married to each other, a bastard*), but from a different father, caused much stress in the marriage. We did not know about it until after mother passed away. Dad explained the secret was always in jeopardy, fearing he would spill the beans sometime at the bar, the world would find out.

Of course, mother's siblings must have known, but it was always hushed up.

The Dixie Style Cloggers in Irving Texas (attended Sunday afternoon for 7+ years).

I participated in a couple of the annual parades at Irving TX.

Also, exhibitions at the state fair.

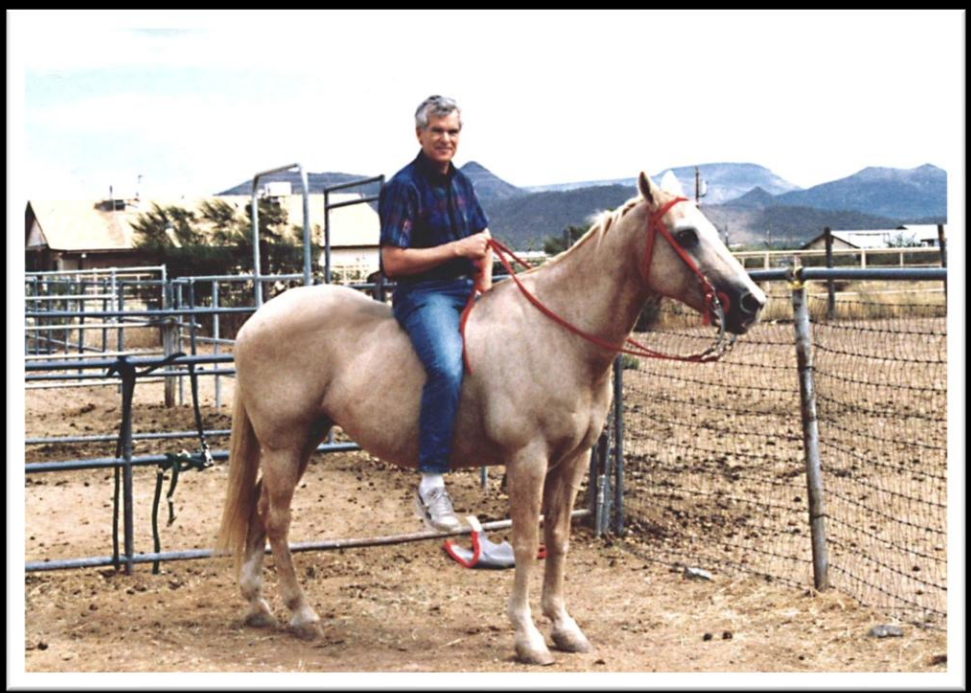
➔About 1996, worked at the ballpark in Arlington (now called Ameriquest Field), volunteered at food booth for Dixie Style Cloggers revenue.

➔I joined a 280ZX club and one of the activities was to drive the track of the Dallas speedway.


TEXAS
TEXAS

1993, April, Purchased Phoenix Home

Purchased home at North Phoenix for Mary, I was still living in Dallas. Bob and Connie added a park model trailer.




STATESVILLE
NASHVILLE
RD

➔Leased a new 1993 Nissan Sentra.

Participated in Maltese dog breeder business, ended up caring for the remaining dogs for about 15 years.

➔Started Ostrich business

The Ostrich is the largest living species of bird in the world, typically weighing 140 – 290 lbs and measuring 6 – 9 ft in height.

Ostriches can run at maximum speeds of about 60 mph making it both the fastest two-legged animal in the world.

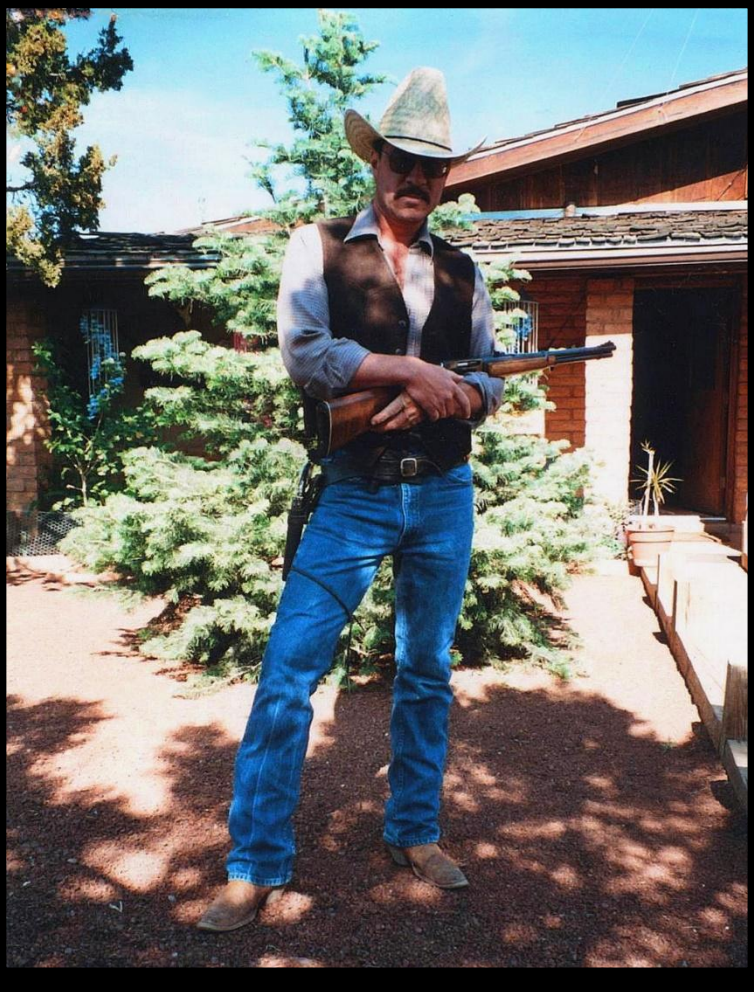
The Ostrich is farmed around the world, its meat is marketed commercially with a taste similar to lean beef and is low in fat and cholesterol and high in calcium, protein, and iron. The feathers, which are decorative and are also used as feather dusters. Its skin is used for leather products and it is claimed that Ostriches produce some of the strongest commercial leather.

Started with smaller birds, Rheas. Purchases six chicks, raised and sold them for a $2,500 profit.

Purchased a breeder pair of ostriches for $18,000. Hard to find, good price at the time. Boarded them out at a ranch in Wickenburg until we could purchase appropriate property.

1995, October, Purchased Vernon Home

The Vernon home had 3 br, 2 ba, a detached 2 car garage and about 7 acres, big enough to raise ostriches. Outside was lannon stone with cedar shake roof.



Bob pretending to be a cowboy ➔

Then he was Santa Claus.

➔About a year later, Scott's parents, from Waukesha, placed a mobile home on the property making use of preexisting pad and septic. They became our close neighbors.

Purchased two pair of emu's, bigger than a Rhea but smaller than an ostrich. Actually, got one of my JCPenney counterparts in Dallas interested in Emu's. We traveled to Emu places in the Dallas area and purchased some Emu meat for trying. Lorin was excited about raising Emu's, so I accepted half the cost of the 4 Emus as an investment for him ($1,500).

The ostriches were still being boarded at Wickenburg. Then one day the I got a call from the boarding place. The female ostrich had smashed into a fence post and killed herself. Fortunately, the ostriches were insured, and I collected I think $9,300. I should have known better by then; the ostrich market was starting to decline. I purchased another female for $8,000.

By this time fences have been built at the Vernon property and the ostrich pair was relocated from the Wickenberg boarding place.

Purchased a special ostrich incubator for hatching her eggs (about $800). The female ostrich started laying eggs (one egg every second day for 3 months). We tested the incubator on the first egg and amazingly it hatched. This was pretty great; our business was showing progress. It was also the last and only egg to hatch. Regardless how carefully the temperature and humidity were monitored, eggs rotated, the eggs would start to develop a chick and then die before hatching. It was suggested that the problem was due to the thinner air at about 7,000 foot elevation.

Maybe it was a good thing, the market was crashing for breeder ostriches, and the ostrich meat demand was not developing.

Meat of ostrich resembles beef in looks and taste, but it is very low in calories, fat, and cholesterol. Ostrich meat has 66% less fat than beef and 50% less fat than chicken. It is rich in proteins and contains more iron than beef, lamb, turkey, chicken, and pork. Unlike chicken and turkey, there is no breast meat in ostrich. The meat does not have fat marbling, as seen in beef.

I think the beef cattle lobbyist had something to do with the federal requirement to have each butchered ostrich inspected at a cost of $35. There was little market for feathers and skin. Relying on the meat sales required about $8 a pound, which did not develop. Ended up selling the ostrich breeder pair, the one hatched half grown ostrich and the incubator for I think $7,500. I was still living in Dallas and relied on Scott and Cathy to coordinate the sale. They also put a lot of effort into upgrading the shelter and working with the incubator. Mary was stuck with most of the work.

One day one of the emu's got away and showed up at a neighbor a couple miles away. They had it tied with rope, using a slip knot on its neck. With the help of the game warden the emu was transported back.

We eventually gave the emu's away; it was costing too much to feed and no market for them. Fortunately, the emu eggs also did not hatch, or we would have had more birds and bigger feed bill.

➔I remember one time I was a usual 20 minutes early for work and heard something bump the wall of the restroom. When I exited the restroom there was a guy laying on the floor. I rushed to the elevator and went down to the main desk downstairs for help. They called 911 and sent a couple responders with me to show them where the fallen guy was. They were communicating on their walkie talkies. Within a few minutes medics arrives and transported him to the hospital.

It turned out that the victim was the father of a friend of Cathy. About 30 years later, Cathy was visiting her friend and was introduced to him. Still going strong at 87.

1998, April, Retired from JCPenney

I took an early retirement offer from JCPenney (extended 14.5 year's service to 16 years as it applied to pension, plus modest monthly supplement until age 62). Left Dallas April 1, 1998 and moved to Vernon home.

Bob helped me load a U-Haul and drive back with 280ZX on a car carrier. I remember reserving a tow dolly, but when picked up the truck the U-Haul place said I needed a car carrier vs dolly. Interesting because I used a tow dolly successfully when moving from Atlanta to Dallas. I backed onto the dolly because it was a rear wheel drive, leaving front wheels tracking behind. The ignition locks the steering in place, but it was not good enough for Dallas U-Haul.

➔A year earlier I paid off the lease on the Sentra so I could collect on hail damage ($1,200). Then one day Mary and I were returning to Vernon home via back roads after a snowstorm. Not very familiar with the road, I approached a curve too fast and slid off the road into the field. We had to get towed back to the road. Soon discovered damage to the transmission case.

Traded in the red 1993 Nissan Sentra for a 1993 Cadillac Deville. Purchased in Show Low about July of 1998. Sentra and about $5,500.

➔Purchased a 26 foot 1973 GMC motorhome

The **GMC Motorhome** was manufactured by the GMC Truck & Coach Division of General Motors for model years 1973–1978 in Pontiac, Michigan, Manufactured in 23 and 26 ft lengths, the design was noted for its front-wheel drive and its low profile, fully integrated body.

Found ad in paper, located in Mesa (suburb of Phoenix). Paid around $7,800?

Had to fix some issues with the plumbing and the brakes. Got about 12 mpg.

➔Made a trip with the motorhome to San Diego with Cathy and the kids.

➔Sultan sea

Campland

Nice beach but it was not usable when we were there.

Scott met us there and put up a tent

The Silver Strand on the ocean.

➔After the ostrich business was a flop and we were considering moving away from Vernon, we sold Church in-laws 2 acres. I paid for the survey and connection to the public water. The proceeds ($10,000?) were sent to Liz as compensation for inheritance missing when Anyu passed away.

Put the Vernon property on the market and drove the GMC motorhome to Wisconsin to start search for new summer home. Stayed several weeks at the Semo's front yard in Gordon. Took it to Link's RV in Minong to replace the hot water tank.

While we were staying in Wisconsin, received a phone call from the real estate agent about an offer on the house. The buyer offered enough down to cover the existing mortgage plus a land contract on the balance over 8 years. The offer was accepted, and we returned to move the furniture to storage a few miles away. We then moved in with Bob living in Phoenix.

2000, April, Purchased Spooner Home

Purchased Summer home near Spooner Wisconsin. 4 br, 2 ba, 2,500 sf, 4 car garage, three level A frame on 9.69 acres with river frontage ($160,000).

The table Bob made


A-frame —>

2000, JUNE 21, SISTER JUDY PASSED AWAY

Born December 11, 1931, Judy was 68. Had pancreatic cancer. She was living with an old friend Ervin Novak in Cedarburg WI.

There were periods that we did not get along well. It started when she divorced Gib, shortly after I moved out. When Uncle Willis passed away, I was executor. He did not want to give Judy any of this inheritance. He only had like $9,000 and he wanted to give some to several people including his daughter (that no one knew about). Judy blamed me, even though I gave her $1,000 from my $2,500 share I heard from our attorney that she disowner me as a brother.

After several years, Jerry (her new husband) convinced her to make up with me, he was suffering from diabetes and did not live much longer. When I was living in Dallas, she made several trips to visit her daughter and family at Louisville, TX. I was invited to join them. We would play cards with Terri and her girls.

I could not find a picture with Judy. This was at Louisville with Terri and her kids.

➔Built new entrance to A-frame.

Caught 4 pound bass in rice lake (accessed from frontage river).

Purchased a 1980 Mitsubishi truck. Needed for hauling materials projects and cleanup. Was cheap, around $250, rough shape, but always started and ran. Sold for $150 after sale of property

Deer feeder

Turtle burying eggs.

One of the Maltese dogs (Julie), had a frightful experienced when turtle clamped on to her tongue. I had to use a pliers to get turtle to release its bite.

Winterized the “A” frame and returned to Phoenix to stay with Cathy and family where it was warmer for the Winter and we could help with the triplets. Cathy was living at 201 W Tierra Buena Ln in Phoenix.

➔Repainted 1973 GMC motorhome (23 cans of spray paint). Stored at Cathy's house.

➔Returned to Spooner home for the summer. Had to fix a frozen pipe issue when water was turned back on.

Painted the “A” frame

Started building pier for access to river. Completed about 2/3 of the 500 feet prior to Fall departure.

Was living at the Spooner house at the time of the 9/11 attack.

➔The next year Bob decided to stay and live in the “A” frame during the Winter while he worked for a trucking company.

Bob had a hard time dealing with his trucking job and winter weather. Survived a chimney fire at the “A” frame and later had to go to alcohol addiction rehab (Shell Lake). He then returned to Phoenix, got another trucking job, and purchased a house near Union Hills.

➔We returned in the spring, completed the pier, worked on cleanup, and put the property up for sale.

Sold property for $165,000.

2002, June, Moved Back to Arizona

Stayed with Bob while we looked for a new home.

Thinking about looking for a home in California. Decided to travel with a travel trailer. Found a very nice 27 foot trailer, only 4 years old. 1998 Sandpiper purchased Aug 2002 from E-bay seller about $9,000.

Then needed a vehicle to tow it with.

Found an interesting vehicle online.

A 1983 Suburban 6.2 diesel ($1,500).

Then we found this hobby farm in Camp Verde near a river with irrigation. The California trip was canceled, and we got serious about purchasing the Arizona property.

Sold the trailer June 2003 for $8,900 to a guy in California. Never used it, Cathy and family borrowed a few days.

2003, April, Moved to Camp Verde

Purchased home at Camp Verde, Arizona ($160,000). 2 br 2 ba, 1475 sf, 2 ac.

No Verde river frontage, but a couple hundred yards away.

Verde River

Pecan trees

Apricot trees

Irrigation

Animal yard.

Peacocks, they came on their own

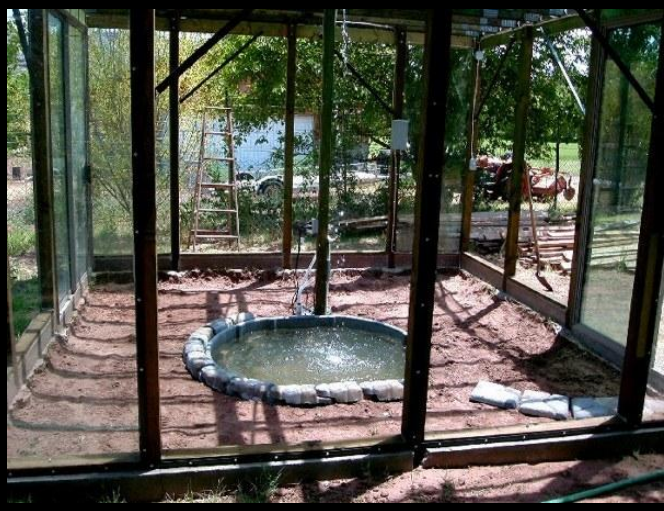
The cliffs – telephoto view from our yard toward the East (note pair of bald eagles)

➔Built greenhouse (15 x 15) all glass. Used rejected glass sliding doors provided by neighbor. Separated duel pain tempered glass, 3 x 8 and 4 x 8 pieces.

When working with the greenhouse I was dealing with 90 pound bags of cement. I started bleeding from my butt. After losing about a cup of blood, called 911 and I got a quick trip to the emergency room in Cottonwood. A week prior I had a colonoscopy and had a polyp removed from my colon. The doctor said I could resume normal activity after a week. I guess lifting heavy bags was not normal activity. I spent 2 nights at the hospital.

Added a plastic tank for goldfish.

Added a swamp cooler and misting system.



➔Traded the 1993 Cadillac Deville for a 1997 Cadillac Deville. Found it online at Phoenix Cadillac dealer. The

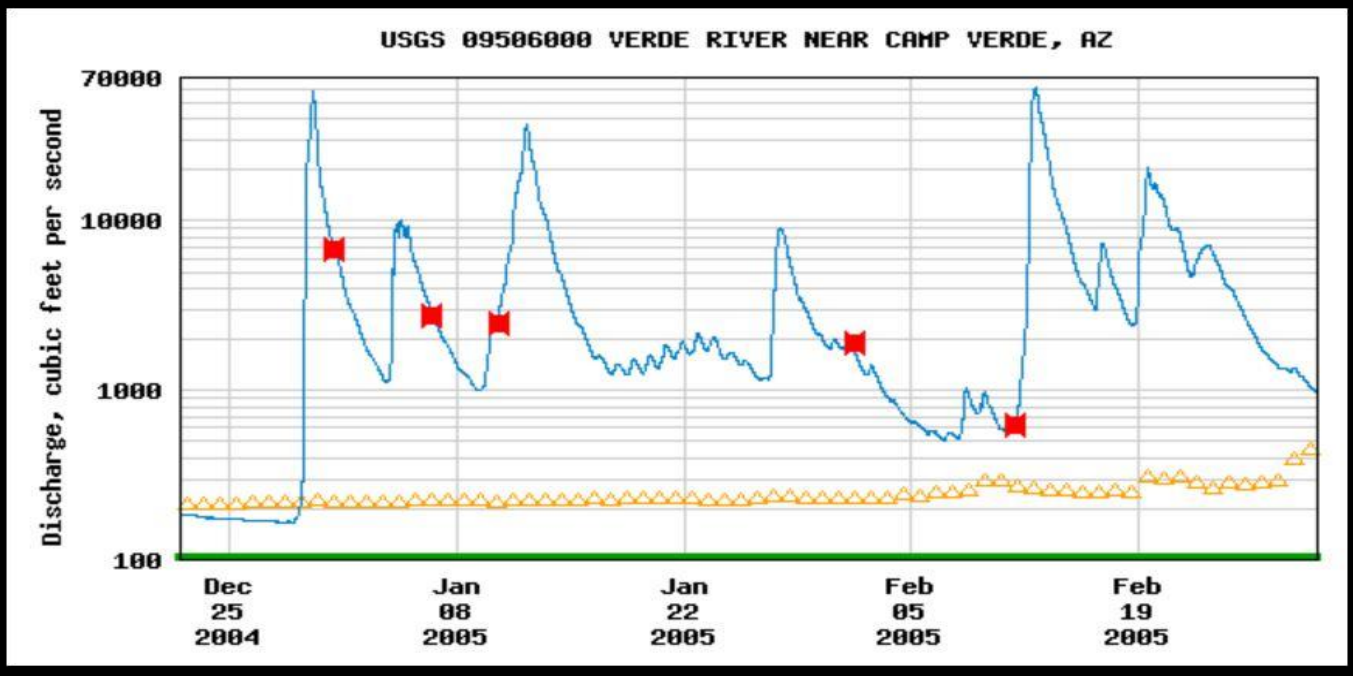
1993 was showing signs of an engine problem, upgraded 4 years and 50,000 less miles for about $7,500.

➔Two Verde River 100 year floods

The first flood was 12/29/2004, the maximum water flow was 58,100 cubic feet per second. The normal flow for that time of years is 60 cfps.

Bob with some of the debrie after the flood.

The second 100 year flood, occurred a couple months later, on 02/11/2005 with a flow of 62,000 cubic feet per second.



One cubic foot (7.5 gallons) times 3,600 seconds in a hour equals 27,000 gallons per hour. Therfore 27,000 * 62,000 = 1,674,000,000 gallons per hour.

Lake Michigan, according to satellite measurements and formulas, holds One Quadrillion gallons of water. That is 1,000,000,000,000,000 gallons. In order to raise the lake's water level one inch, it would take around 400 Billion gallons of water. So, if the Verde river was flowing into lake Michigan at the peak of the flood it would have raised the lake level by 1.0 inch every 10 days.

The second flood the river water came within 50 yards of our back yard.

➔Built a bridge in the animal yard.

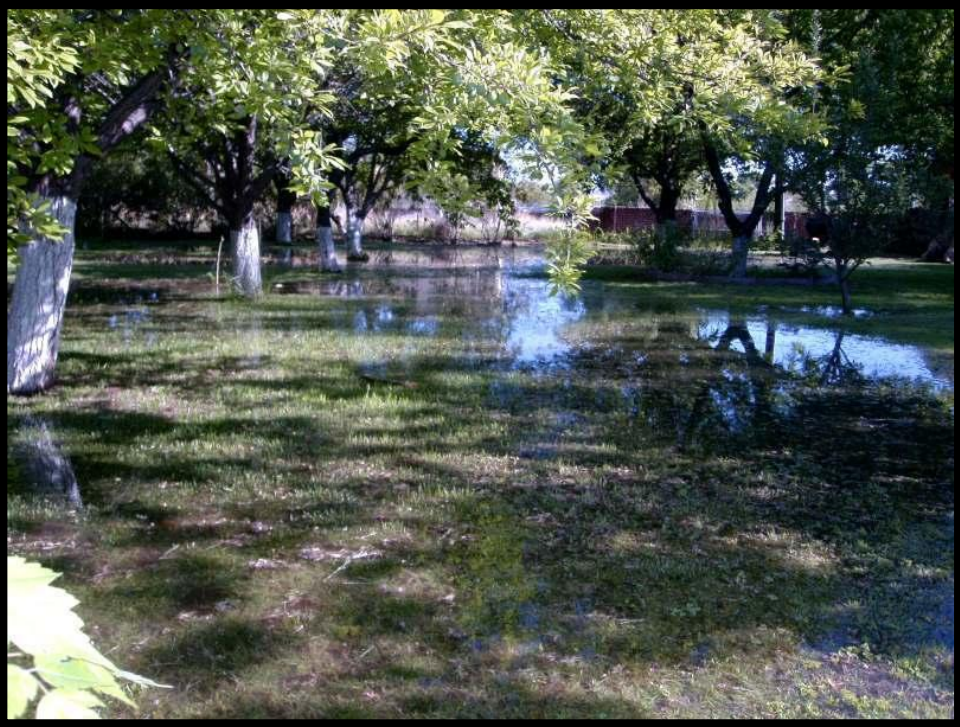
➔Built storage unit for Bob's stuff.

➔Developed irrigation system.

Initially the common approach was to flood the required area with several inches of water about once a week. The water source was a shared valve. Each user had a predefined access day. After turning the valve on, water gushes down the ditch

Gates are set to direct the water to desired home.

The problem is the water does not reach everything. It works for the orchard, but anything at a higher level is ignored. The West end of the animal yard had some benefit, but the East end was left dry.

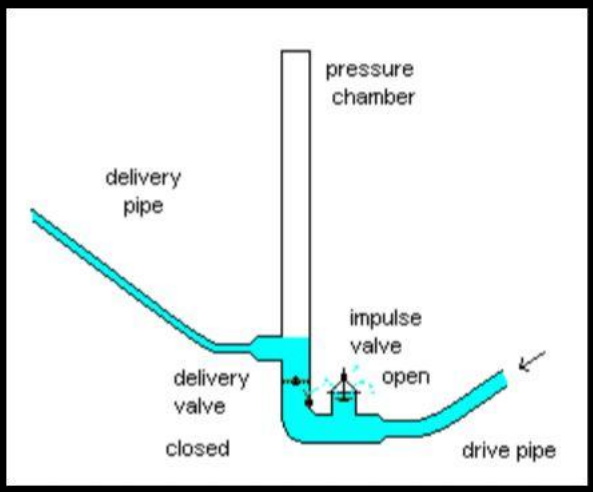


I was talking to my neighbor (on the East), and he suggested I could connect to his irrigation system. When he built his home a special irrigation underground pipe was installed at the corner of his property. I jumped at the opportunity and was laying 4 inch PVC pipe the same afternoon. Connected the pipe from his system to a valve at the corner of our property. This was great, the valve could be turned on at any time and the water was had about 15 psi pressure. I connected a series of 2 and 3 inch cheap black pipe to direct water to many places.

Used some drip hoses to keep parts of the animal yard watered. Then one day the power company came to replace a electric pole (wasn't even in use). The truck got stuck in an area softened by the drip line.

➔Made a duck pond

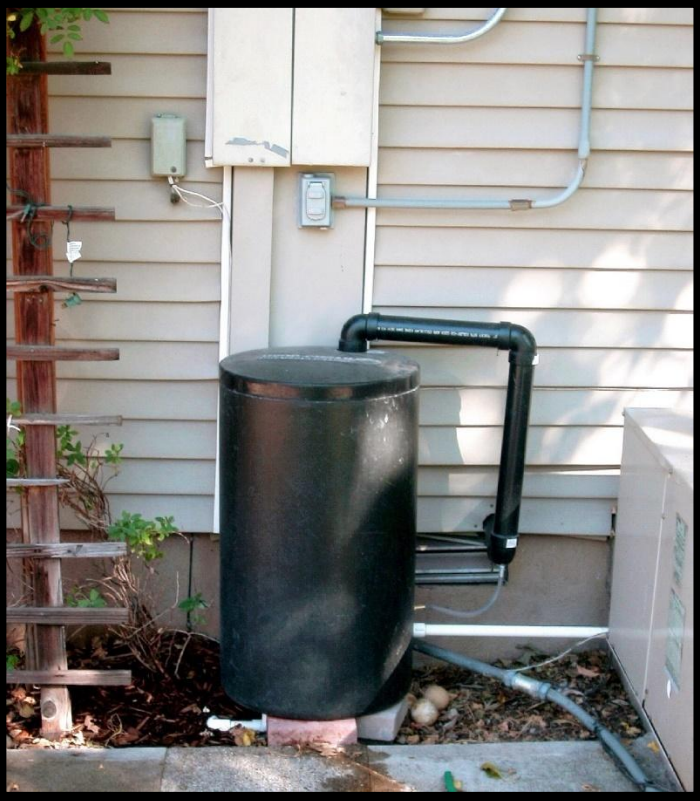
➔Made a ram pump. A cyclic water pump powered by hydropower. It takes in water at one "hydraulic head" (pressure) and flow rate, and outputs water at a higher hydraulic head and lower flow rate. The device uses the water hammer effect to develop pressure that allows a portion of the input water that powers the pump to be lifted to a point higher than where the water originally started. The ram requires no outside source of power other than the kinetic energy of flowing water.



Interesting pump, but not very efficient (10%). Soon abandoned.

➔Added electric opener to driveway gate. It used a remote to open and close, like a garage door. Also wired manual switches, one at entry and one at exit. Added security switch in series with entry switch so that it could be disabled. Powered by a 12 volt battery.

➔Experimented with a gray water system.



Water from the washing machine was collected in this black plastic tank (was used for holding salt supply for obsolete water softener). The water drained out the bottom to a ½ inch PVC pipe directed to plants at the edge of the shed. Work ok for a couple years. Collected lint eventually clogged the pipes.

➔Upgraded the heat pump. It was old and had an issue with freezing up under certain weather conditions.

I had a local guy come out work on it. He was using a torch to solder some replacement item that made him sick after he got home. A couple weeks later it had another issue, so I decided to replace it with a newer bigger one. Also had additional venting ducks and additional air return installed. It now had a programable thermostat and ability to run fan at slow speed continuously. It had extra capacity so Mary could ask for a wide range of temperatures to fit her mood.

➔Problem with septic system. Had to upgrade drain field.

70 feet long, 4 feet of gravel, 3 feet below surface.

➔Raised some giant turkeys.

Purchased two turkey chicks from the feed store. Butchered the first one for Thanksgiving, it weighed 57 pounds. Ervin visited the following Easter (April 2005), this one weighed 69 pounds.

➔Killed some snakes

Shot the head off this rattler in the rabbit cage (March 2004). It was 36 inches, 11 rattles.

The second rattler was after some baby chicks, longer, but only 6 rattles (June 2007).

Gopher snake (Aug 21, 2005)

Eastern Glossy snake, eat a bunny, was too fat to exit cage (June 1, 2006).

California King snake (July 2006) under rabbit hutch.

➔Purchased 26 foot,1978 GMC motorhome ($7,800 from private party in Cottonwood).

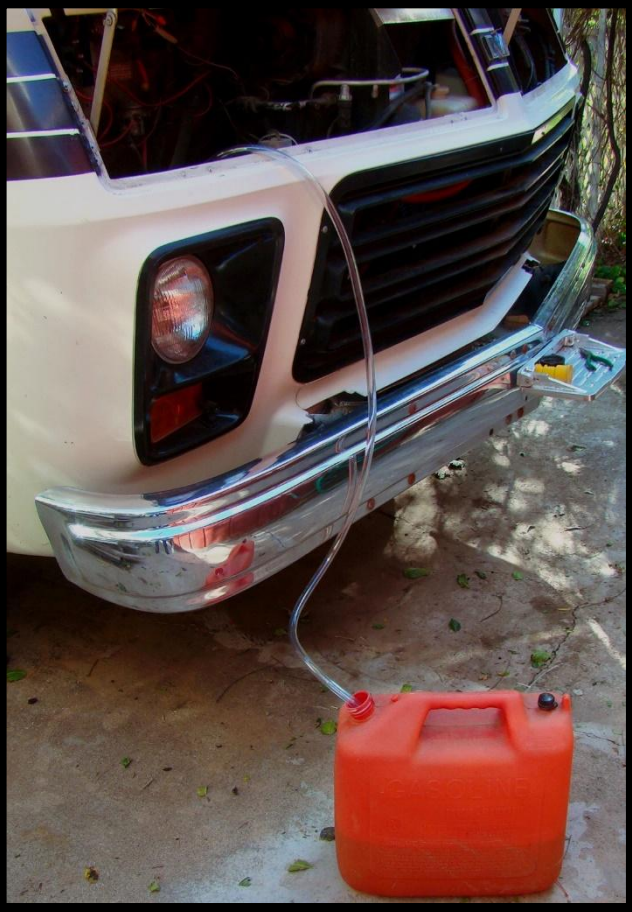
I sold the 1980 Nissan 280ZX to the same guy that I purchased the GMC motorhome from ($1,200).

Replaced CV boot (Constant Velocity Joint).

Added winterizing kit.

Added electric fuel pump. Allows priming of gas lines prior to cranking engine.

Installed in a way so that I could access fuel and fill external gas can (for lawn mower etc).



Replaced suspension air bags and upgraded the auto leveling system.

Installed catalytic heater. Vented, automatic start, thermostat control.

Added auxiliary electric vacuum pump for brake booster. In case the engine stalls on a hill.

Replaced exhaust system.

Upgraded to aluminum wheels with more available tire size.

New wheels came with new tires, mounted, driven and then trued and balanced.

➔Tiled kitchen counters.

➔Tiled floors in bathroom and living room.

Added electric heat under the tile for bathroom.

In the living room, the heated area was only at the foot placement area of normal sitting (front of sofa and chairs).

➔Built skunk gas chamber and killed over 225 skunks (in 10 years).

➔Traded the 1997 Cadillac for a 2002 Cadillac. It was having a torque converter problem. Found this one online at Van Chevrolet in Scottsdale. Upgraded 5 years and 40,000 miles plus model upgrade from Deville to Seville for about $8,000.

➔Built goat climbing structure.

➔Produced slideshows, click here for transfer to my website

1. “Dear Folks” Info related to dad’s. WWI letters from home and more
2. Larry Semo tribute
3. Larry Semo birding

➔Turned Camp Verde, AZ property into $75,000 profit.

Took advantage of Reverse Mortgage contracted just before the real estate market bubble burst. In January 2006 got a reverse mortgage appraisal for $287K (excluding extra lot). A that time there was a $295K limit on a reverse mortgage. There was a 6 month time limit on the appraisal. I waited awhile and the government changed the mortgage limit to something much higher ($500K?).

Now I had an option to redefine the property to include the extra lot and get a new appraisal. Problem was that values were already coming down and I was not sure if a new appraisal with added lot would be significantly higher. I decided to wait, values kept falling. Just before the appraisal expired, I proceeded with the $287K value Reverse Mortgage.

Equity from reverse mortgage was $63K. I elected to take $30K cash and kept the remaining in escrow. Of the $63K equity, $27K was attributed to the earlier second mortgage payoff (2005), or $36K profit. Then the sale of adjacent lot for $40K less appraisals/fees of $1K

equals the $75K profit. Prior to deciding to do the short sale, I withdrew the remaining funds.

A final appraisal was $157K which was paid by the buyer to close the reverse mortgage, plus $40K to me for the adjacent lot.

The reverse mortgage was not final in time to prevent a complication in financing the next home in Minong. It was about 2 weeks from closing on the Minong home when the mortgage underwriter put the kabadge on the new loan. Everything was in motion, we are ready to move, what to do?

The Minong purchase needed $120K. I had $80K available from sale of adjacent lot and remaining reverse mortgage equity. I needed another $40K to be able close on the Minong property.

Considered my remaining 401K which had $57K. Problem is that early withdrawal exceeding 10% is subject to 20% federal income tax. However, the penalty can be avoided if rolled over within 60 days. With no other available option, proceeded to withdraw $50K from my 401K. The penalty is immediately deducted leaving the $40K I needed.

2012, August, Sister Lois Passed Away

My sister Lois was like a mother to me, she was about 12 years older, born July 7, 1928. She later cared for dad and Uncle Willis while raising her family. She had 9 children, 23 grandchildren and 17 great grandchildren. Genealogy was her passion. Suffered from diabetes for many years, finally succumbing to kidney failure.

This is the last picture with all 3 siblings, August 1987

Me, Judy, Clem and Lois (sitting).

➔

Earliest picture I could find of Lois, Glenbeulah Fireman's Picnic. About 9 years old in 1937

High school graduation, 1946, Plymouth WI

2013, MAY, PURCHASED MINONG HOME

Purchased home in Minong Wisconsin, May 10, 2013

As soon as we closed on the Minong property, I obtained a signature loan for $35K to open an IRA to use as a roll over of the 401K withdrawal. When it came tax time, the 401K withdrawal was reduced to $15K requiring $3K penalty vs $10K penalty, resulting in $7K refund.

Buying sight unseen and with all the financing problems, it was a little scary. It turns out to be a wonderful home. More than 4,800 sf, 3 br, 3 ba, 2 car garage, finished basement with lounge including wet bar, recreation room, 3 plus extra bedrooms, 1.2 acres.

Close to everything (fire department/EMC, groceries, hardware store, restaurants, Catholic church, auto repair, gas station, Sr center). Then a couple of years later, the Link aqua and activity center was built.

As it appeared at time of purchase.

It did need some work, the oil furnace and A/C was no longer working. Fortunately, it also has electric heat from two 50K watt heat exchangers in the attic. The old oil furnace was

replaced with a high efficiency gas furnace ($9K). Rather than replacing the attic based A/C systems (2 zones), decided to try the new technology mini split system. ($7.5K) It was an excellent choice, does not use wasteful duct work, also being a heat pump, provides efficient heat for low demand days. Each room can specify the amount of heat or cooling. Amazingly all three units and outside heat pump runs on one 20 amp breaker. Initially a min split unit was installed in each bedroom. It turned out that the one in the small bedroom (Bob's), was overpowering and inadequate for

the other living areas. I had the installers come back and move the min split unit from the small bedroom to the TV room (another $1/2K).

A year later, natural gas was made available. The monthly budget plan for heating is about $80/mo. And that's with thermostats set at 78 degrees because of Mary's health issues.

A couple years later an unexpected expense was discovered. The roof which was only 4 years old, at time of purchase, started having migrating shingle issue. It must have been amateur roofers because the shingle nails were applied at the wrong position. Eventually sections of shingles were sliding out of place.

I had a couple areas repaired. The repair roofer suggested I should check with my home insurance. The claims guy came out and said malpractice was not covered, and went on to say the roof needs to be replaced or my insurance would be dropped. That was pretty discouraging, but it turned out I got a new 30 year metal roof installed for $12K

➔Installed transfer switch at breaker box for generator use at Minong home. Also upgraded wiring, receptacles, and switches.

➔Restored front entrance stonework.

Restored counter tops in Minong home.

➔Restored jukebox, except for DVD player, substituted wireless audio for use with virtual radio stations.

➔Replaced rails on pool table.

→Built rocking chair.

About 5 years later:

About 9 years later:

➔Modified Bob's 29" bicycle with new chain wheel (for more peddle power).

➔Developed strategy to solve evil Sudoku puzzles. I solve 1 or 2 puzzles each day for relaxation. Requires total concentration, temporarily setting aside other problems.

	2		9					
1	3							
	9		6	2				8
6	5			9				2
		2				1		
8				3			9	6
3				6	5		7	
							4	3
					8		2	

➔Built scale model birdhouse.

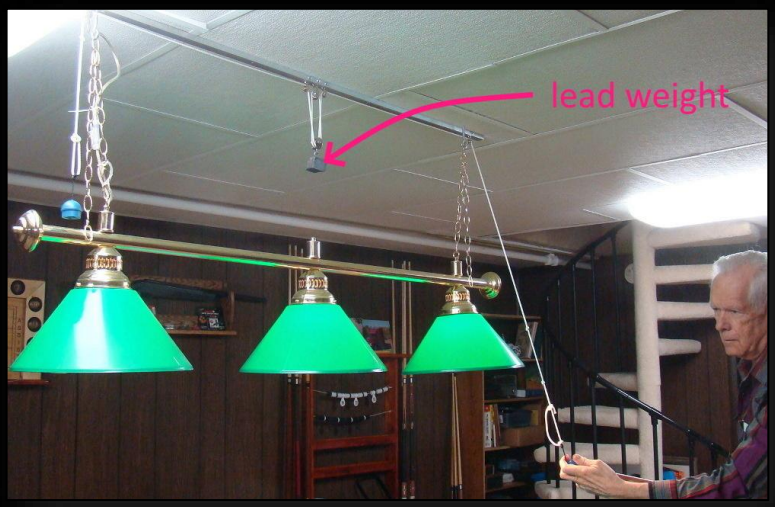
➔Installed electric heater for John Semo's workshop.

Something like this, 240 volt ceiling mounted heater.

Added circuit breaker to the barn breaker box and underground wiring to the workshop.

➔Made a chalk system for pool

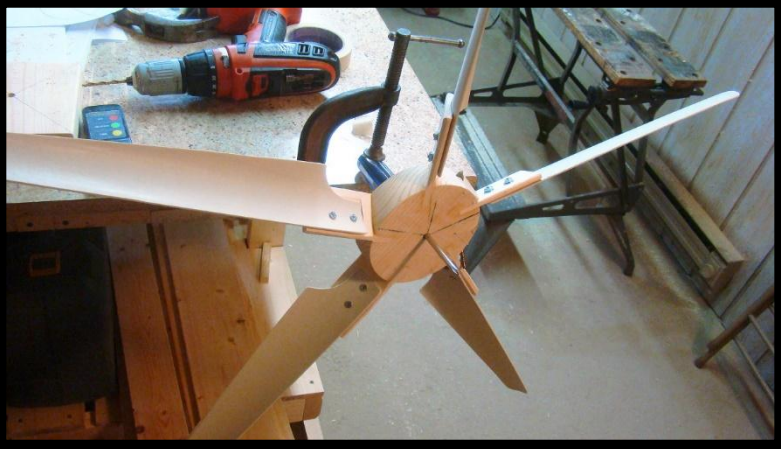
It used a cord with some pulleys and a lead weight. From either end you can pull down the chalk, release and it returns to home position. The lead weight was donated by John Semo, parts he got it from his Father.



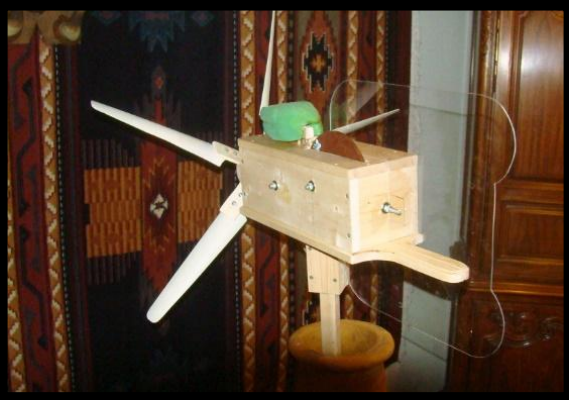
➔Developed the 7up pool game, an evolved version of 9-ball with Snooker banking challenges for more strategic play. Created with John Semo, it's enjoyed for fun and pride. 7up Pool requires careful evaluation of the table status with each shot. The name "7up" emphasizes the importance of the 7 ball.

For more information refer to my PDF “7up POOL Players Guide” available on my website: http://vernonite.com/downloads.word.html and click 7 up pool

➔Made a Whirligig



Uses wooden gear and cams to operate a bird pecking at bugs as the wind blows the blades. Bird rocks up and down, head moves forward and back, and disk turns with plastic bugs.



Jig used to make wooden threads with the router. Turning the crank advances wood cylinder as it simultaneously rotates over the router bit.

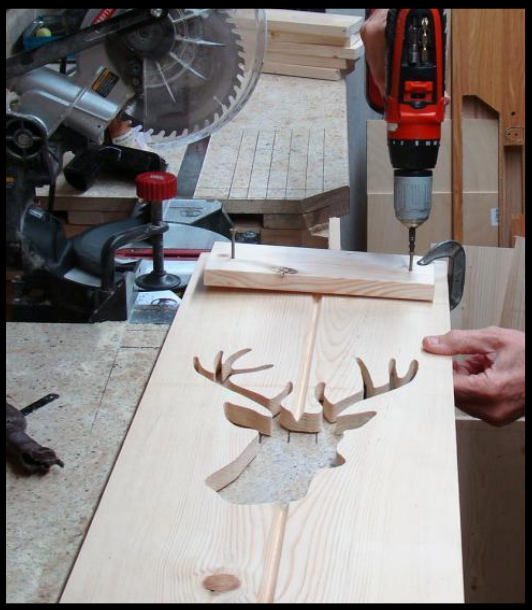
2017, JANUARY, PURCHASED CNC ROUTER

A CNC with both large capacity and a small footprint. With the Carve Wright's unique conveyor belt system, the machine can accept workpieces up to 12 feet long and 14.5 inches wide. Employs a precision conveyor that moves the workpiece past the cutting spindle along the long axis.

Features:

- Easy to use design software.
- Memory card stores project files and plugs into the CarveWright so computer designing can be kept away from the sawdust.
- Machines soft and hard wood, plywood and MDF, heat-resistant plastics.
- Feedback sensors tell the machine the size and position for fast workpiece setups.
- The machine measures the workpiece, tells what bit to put in, and locates all of its index points automatically

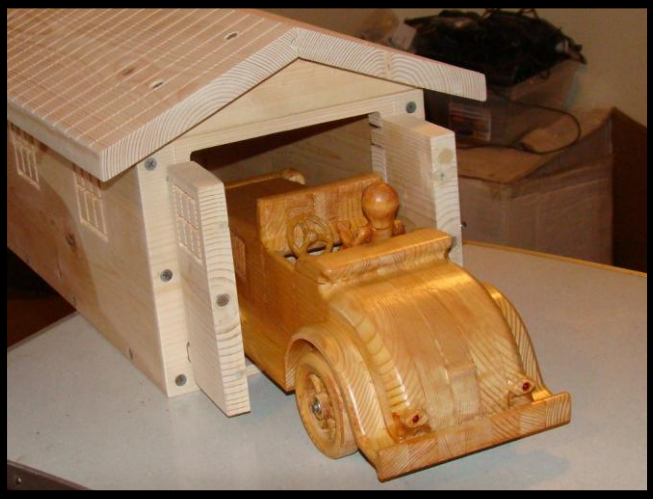
House shutters



Roadster made from 5 slices of ¾ inch pine glued together. When it is pushed the rear wheels operate generator that light the lights. Headlights when pushed forward, tail lights when pushed backward.

Steering wheel made from Gorilla glue.

Roadster garage



Additional project information can be viewed online at:

vernonite.com/hobbycraft.html

2017, SEPTEMBER – SON BOB PASSED AWAY

Bob passed away at the emergency trauma center at the University of Wisconsin in Madison on September 7, 2017. As a consequence of liver failure caused by alcoholism.

Photo added by D Maron

Robert John "Bob" Wolever

BIRTH	31 Jan 1964 Plymouth, Sheboygan County, Wisconsin, USA
DEATH	7 Sep 2017 (aged 53)
BURIAL	Saint John the Baptist Catholic Cemetery Jefferson, Jefferson County, Wisconsin, USA
MEMORIAL ID	183238112 · View Source

Bob was dealt a bad hand. His personality, although soft hearted and good natured, had problems with people picking on him. An accident at his high school added to his mental stress. He did well in welding class, until one day he was assigned an extra credit job removing the tops of 55 gallon drums. Somehow one of the drums had not been cleaned out. It exploded when Bob started cutting out the top with a torch. The trajectory of the drum struck him in the forehead, and exposed skin was burned.

Welding explosion injures student

By Tom Rickert

A Waukesha South Campus student was burned and cut this morning when flammable solvent inside a 55-gallon steel drum exploded while he was working on the drum with an acetylene cutting torch.

Injured was Robert Wolever, 18, of W223-S3745 Guthrie Rd., Waukesha Town.

He received a four-inch cut above the right eye and second-degree burns to his hands and forearms, according to the Fire Department.

Paramedics treated him at the scene and took him to Waukesha Memorial Hospital, where he was in stable condition at 11 a.m.

The accident happened in the welding shop shortly after 9 a.m., said Vice Principal Robert E. Laabs, who provided these details:

Wolever was about to remove the top of the drum, "an operation

See picture on page 3.

we've done here hundreds of times."

The drums are donated by local industries and are used as rubbish containers in school parking lots and near doorways. They are also used to collect scrap steel locally for use in school class projects.

One report was that one end of the drum was marked "Flammable," but the drum was standing upright on that end so Wolever couldn't see the warning.

Wolever thought the drum had contained soap, but it was actually a solvent used to clean metal parts.

The accident might not have occurred if Wolever had removed the drum's metal plug. He failed to do so, so the pent-up solvent fumes expanded from the heat, causing the explosion.

The top end of the barrel gave way at the seam and struck Wolever, the Fire Department report said.

There was no fire and no damage to the welding shop, Laabs said.

He also said Wolever was in mild shock right after the exposion but did not lose consciousness. The impact knocked his safety glasses and safety shield off.

The class instructor, Brad Willard, was not in the room at the time. The explosion occurred near the open outer door on the northwest side of the school.

Principal Richard Arnold said it was the first such accident at the school since it opened in 1956.

EARL SCHNEIDER, FREEMAN STAFF

Explosion aftermath

Waukesha police officer Don Purtell examined a barrel a student was cutting when it exploded, injuring the student (story on page 1).

He spent a week in the hospital dealing with pain from burn blister on both arms and part of his face. After the pain medication ran out, he used alcohol to comfort continued residual pain. The blow to his forehead fractured some skull bone which never healed and destroyed some brain tissue. Reviled years later with MRI.

He suffered from attention deficit disorder, and mysophobia. The fear of germs leads to other mental health issues such as depression, and anxiety. Complete avoidance of germs actually contributes to the development of health problems. Overuse of antibacterial and disinfectant products has been implicated in the spread of new, resistant infections. He used hand sanitizers constantly. If he touched the lid of the trash can, for example, he had to apply a hand sanitizer.

He had many hospital stays during his last few years. Besides dealing with liver issues, he would have bacteria issues. On multiple occasions the hospital would quarantine him because of bacterial infection that he had. Another idea regarding the excessive sanitizer usage (75% alcohol) is possible explanation why he tested for binge alcohol usage when he claimed he had stopped drinking.

The test caused denial of a liver transplant.

➔He left us the 2004 Nissan Armada. Cathy & Scott donated it to Bob when he was visiting Florida (4/6/15). It had a lot of miles and had some engine issues, but he was happy to have it, especially for towing his boat and trailer.

2017, December, Wintering in Florida

Travelled to Florida in time for Christmas. Stayed with daughter Cathy Church and family. They had recently purchased a condo home on the ocean beach. It was 3 br, 2 ba 1726 sf on the 4th floor with ground level 1 car garage, and swimming pool.

Celebrated great grandson’s (Jaxson) one year old birthday

Went with Scott, Mike and Jared golfing, I was score keeper, it was cold and windy.

Came with 2004 Nissan Armada (was Bob's gifted from Cathy and Scott). Viewed from 4th floor condo.

Was having some issues with the Armada, sometimes would lose power going uphill, later diagnosed and fixed by replacing cylinder 8 ignition transformer. On the way, the rear passenger window would not close. It was cold outside and needed to be fixed. A Nissan dealer was located about 30 miles away, so a blanket was placed in the open window, and we headed there. Two dogs, Cholla the Maltese and Bob's Drifter, a cocker spaniel, and a bird named Mosey, a Starling, were all in the waiting room at the repair place. After approximately 45 minutes, it was reported that the technician was able to close the window without any repairs.

2019, Purchased 2009 Cadillac

Concerns about the 2004 Armada, decided to trade plus $16,000 for 2019 Cadillac Escalade. Sticker price for Escalade was $82,000 in 2009. 104,154 miles.

Features new to me:

1. 403 horsepower
2. Blind spot alert
3. Backup camera
4. Bluetooth – cell phone or audio, voice recognition
5. Curb directed passenger side mirror
6. Heated Steering Wheel
7. Heated/cooled seats
8. Adjustable Pedals - Power
9. Memorized Settings Driver seat, mirrors, pedals, steering wheel tilt
10. Remote Engine Start
11. 4wd Type - Full Time
12. 3 row seating
13. Navigation System
14. Wheels - Chrome Aluminum – 22 inch
15. Tire Pressure Monitoring System
16. Moonroof / Sunroof - powered

2020, March, Trip to Florida

Travel to Florida occurred during the COVID pandemic, resulting in delays for vaccinations. Driving became challenging due to aging and lack of confidence. A friend of Mary from Nashville was invited to drive to Nashville, after which Cathy flew in to continue driving to Mims.

Approximately 10 miles from Mims, the vehicle ran out of gas. Cathy contacted Scott, who arrived with a gas can. The nozzle of the gas can malfunctioned, necessitating the use of an improvised funnel created by Cathy.

Cathy and Scott had recently sold the ocean beach condo and purchased a newly constructed 4 br, 2 ba house on 2.5 acres. Then they added a 2 br, 1 ba guesthouse for us to stay in.

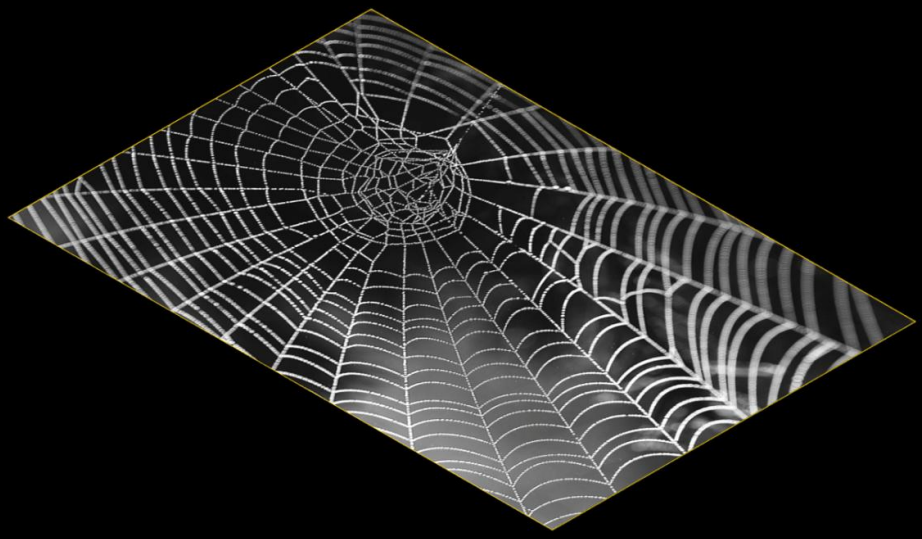
Cathy drove us back to Nashville and Mary's friend drove us the rest of the way home to Minong.

2020 JULY, STARTED ONLINE WEBSITE

Home About Links Hobbycraft Photos Downloads

Welcome to my website

By John Wolever

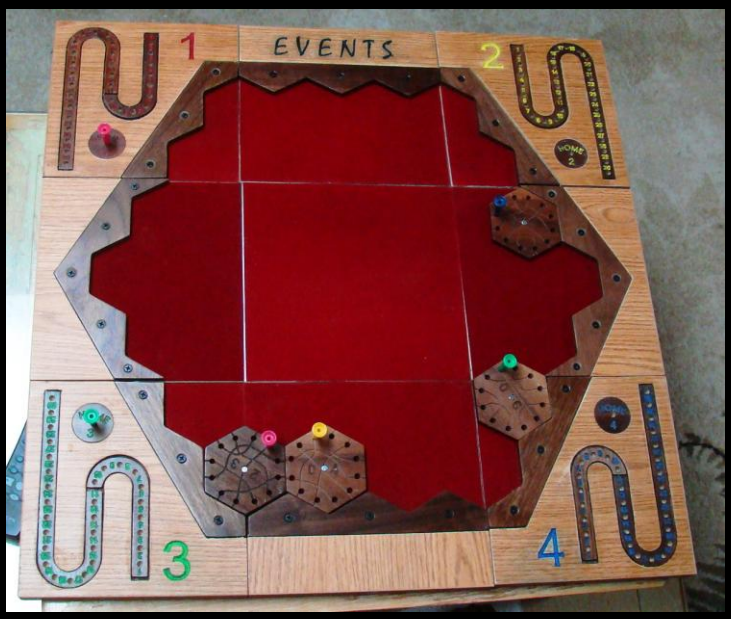


When viewing, you may need to scroll down for navigation links ( )

List of shortcuts to new stuff

www.vernonite.com

During covid social distancing, I came up with an idea to sort of teach family history via game questioning as an encouragement for the young'uns to learn about how it was. I designed a new board game called "EVENTS".



Then I needed a way to organize and present the questions during the game. It was the initial motivation to build a website. Fun for organizing pictures and random stuff while making it conveniently available to family and friends.

It has grown to more than 2 GB on over 10,000 files

The website is: vernonite.com

Click here for shortcut to “EVENTS” game information.

Places I Remember Traveling To Via Airplane

Mostly on employer business to attend GUIDE and SHARE conferences, and classes.

GUIDE – (**G**uidance for **U**sers of **I**ntegrated **D**ata-processing **E**quipment) was a user's group for users of IBM computer systems.

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- Seattle, Washington
- Washington, DC
- Youngstown, Ohio

Sporting Events

- Allis Chalmers employees golf, baseball, and touch football
- Arizona Cardinals at Sun Devil Stadium in Tempe
- Arizona Cardinals at University of Phoenix stadium
- Arizona Diamondbacks at Chase field Phoenix
- Atlanta Braves at Fulton County Stadium in Atlanta
- Atlanta Falcons at Fulton County Stadium in Atlanta
- Auto racing at Hales Corners Speedway
- Boston Red socks at Fenway Park in Boston
- Dallas Cowboys at Texas stadium in Dallas
- Elkhart Lake road racing, on area roads
- Figure skating competition watching Jessica in Phoenix
- Green Bay Packers at Milwaukee county stadium
- Ice hockey competition watching Jared and Michael in Phoenix
- JCPenney employee jogging and 5K run at Wauwatosa
- Milwaukee Braves at Milwaukee County stadium
- Milwaukee Braves at Cubs Wrigley field
- Milwaukee Brewers at Milwaukee County stadium
- Minong High School football and baseball at Minong High school (with John Semo)
- Nashville auto racing (Mary Robins) at the Nashville speedway
- New York Yankees at Yankee stadium
- Plymouth High school football and basketball at Plymouth high school
- Plymouth, stock car racing at county fair park
- San Francisco Giants at Candlestick park
- Texas Rangers at Arlington, TX
- Toured the Astrodome at Houston Texas
- Toured Texas stadium at Dallas
- White socks at Comiskey park in Chicago
- Wisconsin Badgers football at Camp Randal in Madison

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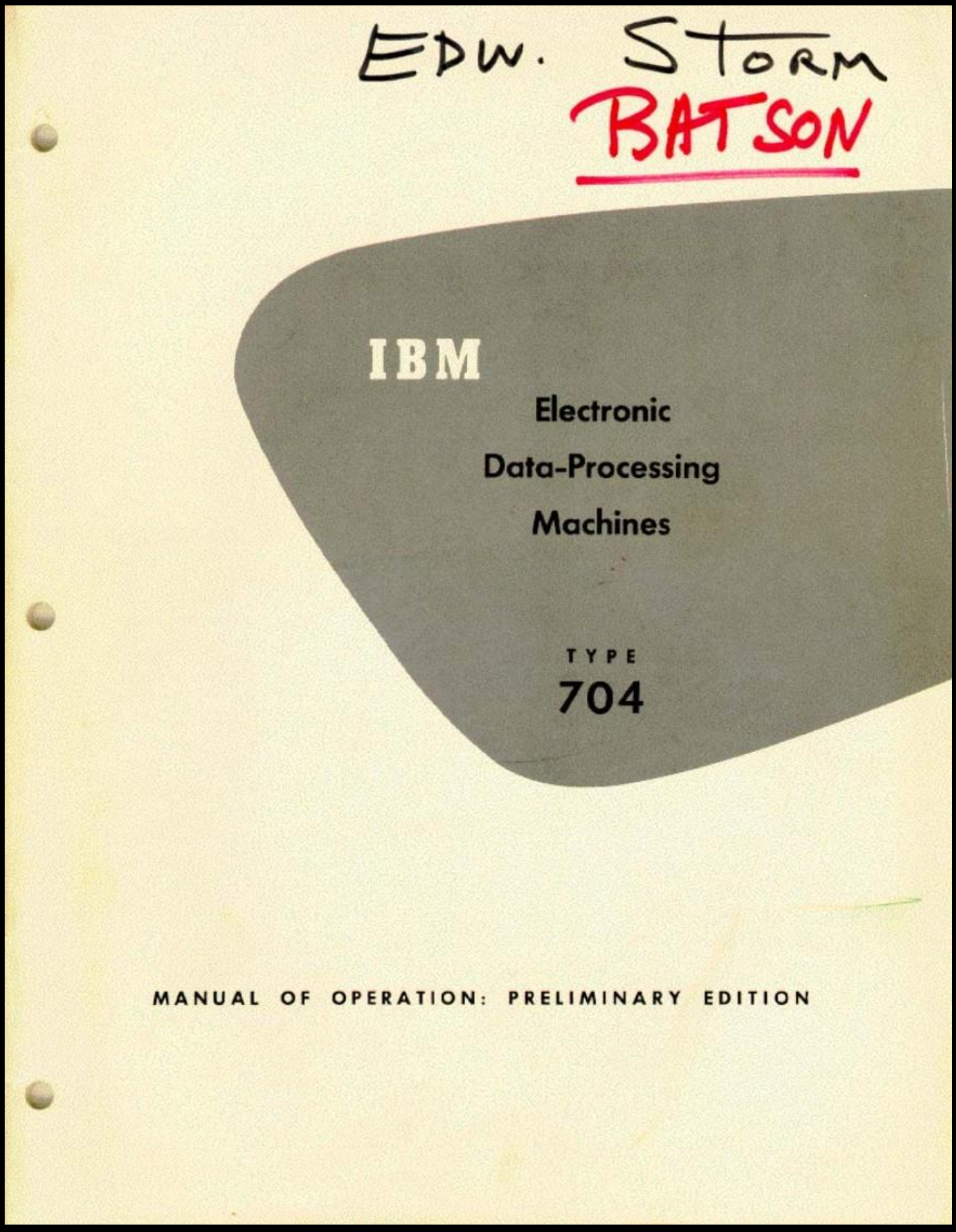
EDW. STORM
BATSON
IBM
Electronic
Data-Processing
Machines
TYPE
704
MANUAL OF OPERATION: PRELIMINARY EDITION

MINOR REVISION (Date: January 1956)

This edition, Form 24-6661-1, is a minor revision of the preceding edition but does not obsolete Form 24-6661-0. Principal changes in this edition are:

PAGE	SUBJECT
10, 11	Removal of fixed instructions ("Addenda").
19, 28, 88	Octal operation code for SRP changed from +0623 to +0630.
26, 30, 31, 33	Input-output delay instruction changed in all programs to WAS 333$_8$.
32, 33	Change in specification of simultaneous tape writing.
33	Tape checking: "Incomplete Word on Tape."
35	Conditions turning on and off the tape indicator light on the tape unit ("Addenda").

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Form 24-6661-1

Edward F. Storm

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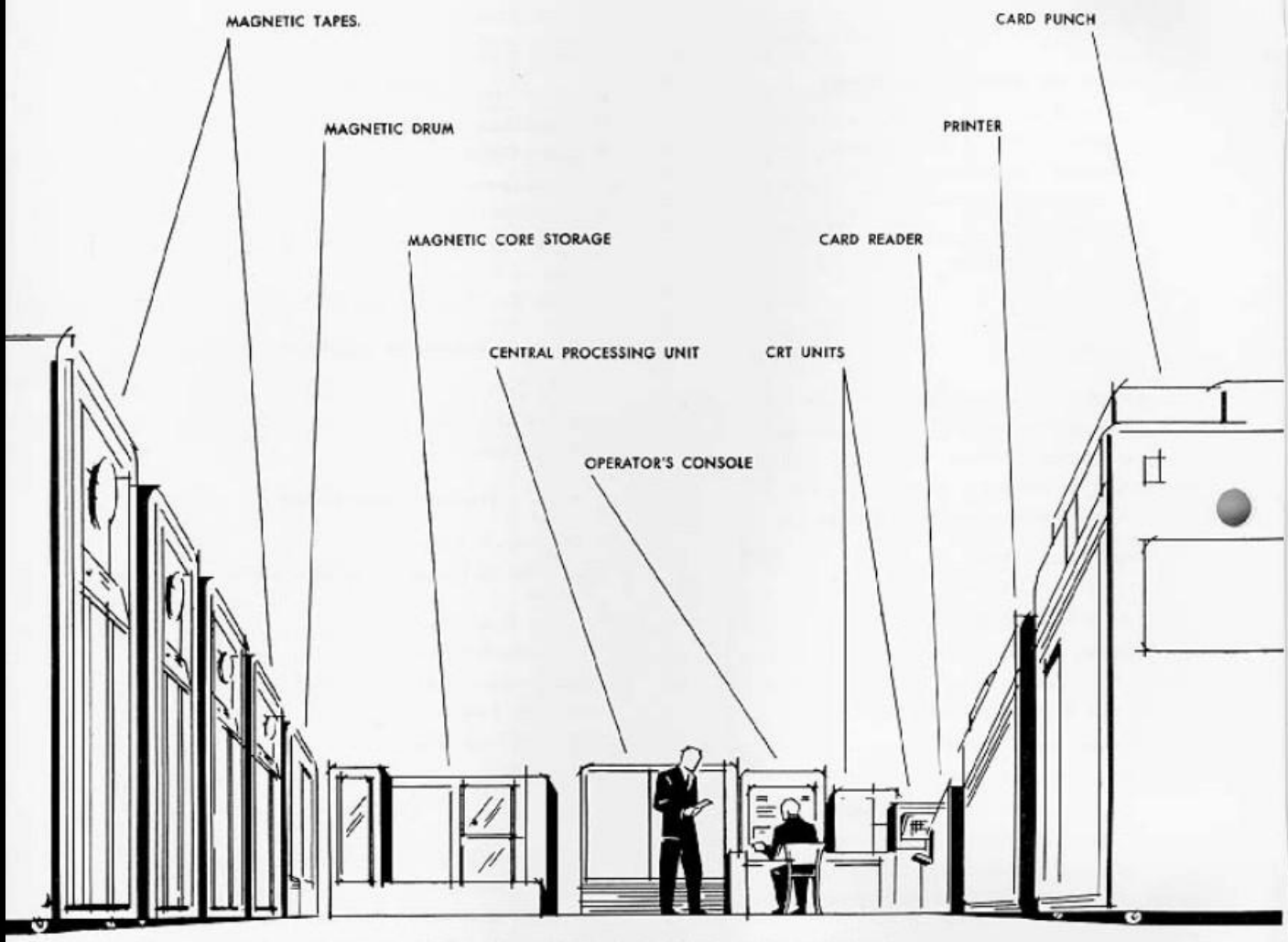


IBM ELECTRONIC DATA-PROCESSING MACHINES
TYPE 704 AND ASSOCIATED EQUIPMENT

ELECTRONIC DATA-PROCESSING MACHINES
TYPE 704 AND ASSOCIATED EQUIPMENT

THE TYPE 704 Electronic Data-Processing Machine is a large-scale, high-speed electronic calculator controlled by an internally stored program with instructions of the single address type. This machine is designed for higher speeds and larger capacities required by problems of increasing complexity and size which confront business, industry, government and science. These problems include engineering development, scientific research, production scheduling and control, econometrics, logistics, procurement and supply, and many others.

In order to achieve maximum versatility, every function of the machine is under control of the stored program. This versatility allows the machine to execute instructions at the rate of about 40,000 per second on most problems. Also, the functions of getting data in and out of the calculator are controlled by the stored program, and hence, under the complete control of the operator. The great advantage of this system lies in the fact that a customer may build up a library of programs which will perform his special applications at peak machine efficiency.

To achieve greater computing efficiency, the 704 works internally in the binary number system. The input and output, however, may be accomplished directly on standard IBM cards in the familiar decimal number system by programming which does not interfere with maximum reading, punching, and printing speeds. Or the information on cards may be put on a tape on peripheral equipment and the tape will then be the primary input. Similarly, the results of a computation may be put on a tape and, at some later time, punched on cards or printed by peripheral equipment.

The internal high-speed storage on the 704 is magnetic core storage. When the amount of storage available in magnetic core storage is not large enough, magnetic drums are used to store and supply large blocks of information for ready access at frequent intervals. When the amount of storage needed is in excess of the capacities of both core storage and magnetic drums, then magnetic tapes are used. Also, information may be stored on tapes and the tapes may then be removed from the calculator. In this way, large amounts of information can be filed for future reference in a very compact and convenient form. Magnetic tape is a storage and input-output medium that allows rapid reading and writing and can be reused many times.

The stored programs may be written and introduced into the calculator in many ways. Usually the instructions are key punched on cards in their original form and read into the machine. If the program is to be preserved for future use, it can be punched on cards in the binary number system for compactness or recorded on tape and filed away. To prepare the machine for calculation the appropriate magnetic tapes are inserted in the tape units, cards are placed in the punch hopper, if necessary, and the cards containing the instructions and data of the problem are placed in the hopper of the card reader. By pressing one key the calculator may be made to store the program and data of the problem and start computing. From then on operation of the calculator is fully automatic, with all the components being under the complete control of the program, although it is possible for the operator to interrupt the calculation manually at any time.

All of the real work is done in the central processing unit; that is, all additions, subtractions, multiplications, etc. are done in the special registers of the central processing unit. In addition to standard arithmetic, the 704 has instructions which will perform logical arithmetic for increased flexibility in doing complex problems. Also in the central processing unit are three index registers for automatic counting and effective address modification.

An optional feature on the 704 is a complete set of instructions which will perform floating-point arithmetic. This manual includes a complete description of floating-point numbers and the special floating-point instructions (such as floating add, subtract, multiply, divide or halt, and divide or proceed) needed to manipulate data in this form.

STORAGE AND INPUT-OUTPUT UNITS

Access Time

The fundamental machine cycle of the 704 is 12 microseconds. One cycle is the core storage access time, that is, the time required by the central processing unit to transmit or receive a word of information to or from core storage. The time required to transmit information between core storage and any of the input-output units is given in the description of the unit.

Address System

Individual locations (or registers) in magnetic core storage, together with magnetic drums, magnetic tapes, and all input-output units are identified by a system of numerical addresses. By means of a number contained in the *address* part of an instruction, it is possible to refer to the information contained in any register in magnetic core storage or any component of the machine.

Magnetic Core Storage

Information is stored in the primary storage unit by the use of magnetic cores. Each core is a ring of ferromagnetic material. The cores can retain information indefinitely, and recall it in a few millionths of a second. When a wire is inserted through the hollow center of a core, a current passed along the wire sets up a magnetic field around the wire. This magnetizes the core. When the current is removed, the core remains magnetized. If the current is sent along the wire in the opposite direction, the magnetic field set up around the wire is reversed. If the current is again removed, the core will again remain magnetized but its magnetic state will be opposite to that which remained after the first current was removed (Figure 1).

If the first magnetic state can be called positive, the second can be called negative. The positive state can be used to represent a 1; the negative, zero. A group of 36 cores constitutes one register in storage. There are 4096 core storage registers in each unit. Either one or two magnetic core storage units are available.

The principal advantage of magnetic core storage over other types is the very small time necessary to extract information from any given location and send it to the central processing unit. Also the program has random access to any core storage location. Information is not retained when the power is off.

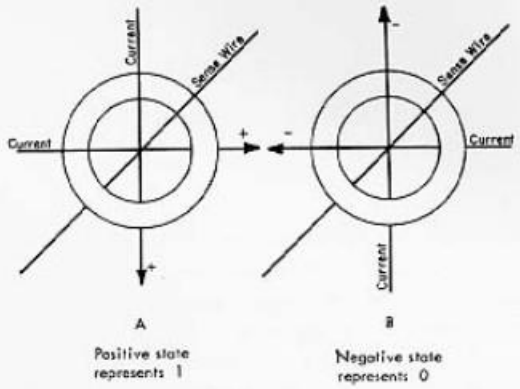


FIGURE 1

Magnetic Drum Storage

Additional storage capacity is provided by eight magnetic drums in two drum units. These drums are rotating cylinders surfaced with a material that can be magnetized locally. Binary digits are stored on a drum through the presence or absence of small magnetized areas at cerain locations on the surface of the drum. Each drum has a storage capacity of 2048 words. The location of a word on a drum is identified by a system of addresses analagous to the system used for core storage.

Any part of the information on a drum can be selectively altered at any time. Because access to individual words on a drum is slow in relation to core storage access, it is more efficient to use the drums for storing large blocks of information. After the first word of such a block has been located, the remaining words are transmitted at the rate of 10,000 words per second. Magnetic drums will retain information when the power is turned off.

Magnetic Tapes

For greater internal working storage as well as their input-output function, ten magnetic tape units are available on the 704. Each unit contains one reel of tape which may be 2400 feet long. The tape itself is a plastic, oxide-coated band one-half inch wide. Binary information is recorded on a tape by means of magnetized spots. A block of words recorded consecutively on a tape is called a *record*. The amount of information contained on each tape depends on the

lengths of the individual records since there is a certain amount of space between each record to allow for starting and stopping the tape. It is possible to store as many as 900,000 words on each tape. After the tape is in motion, information can be transmitted at the rate of 2500 words per second.

Flow of Information

The magnetic core storage is always connected to the central processing unit; also, it is the site of the stored program which controls the entire calculator. The auxiliary storage media and the input-output devices, on the other hand, are normally disconnected; they become connected only by the execution of certain stored program instructions. The contents of these units may control the calculator only after being copied into core storage. Thus, information flows between input-output components and magnetic core storage through the central processing unit (Figure 2).

WORDS

In the 704 the word, or basic unit of information, consists of 36 binary digits (36 bits). Words may be stored in 4096 distinct word locations in each magnetic core storage unit, magnetic drums (8192 words per drum unit), on magnetic tapes (33⅓ words per inch of tape), or on punched cards (24 words per card).

Figure 3

A word may be an instruction, a fixed-point number, a floating-point number, or any pattern of 36 bits desired by the programmer for any reason. The 36 positions of a word are shown schematically in Figure 3. S refers to the sign position, *1* refers to bit position 1, *2* refers to bit position 2, and so on.

When a word is interpreted as numerical data, the zero position acts as the sign (position S in the diagram) of the word. If the sign position contains a 0, the word is positive; if it contains a 1, the word is negative. When a *logical* operation is performed on a word, the word is interpreted as a 36-bit signless number. As an algebraic (signed) binary number, a word is equivalent to an algebraic decimal number of slightly more than ten digits. Three binary digits are exactly equal to one octal digit, and, therefore, a signless word consists of twelve octal digits.

Instructions

The two principal classes of instructions are referred to as Types A and B. Figure 4 shows the form

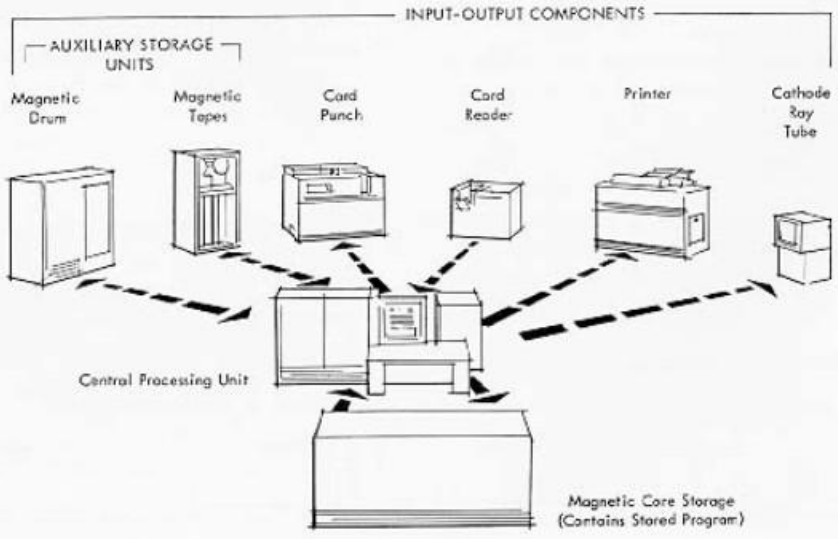


Figure 2

TYPE A INSTRUCTION

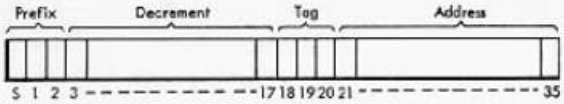


FIGURE 4

of a Type A instruction. Type A instructions use two 15-bit fields (decrement and address) containing numbers in the octal range 00000 to 77777. The prefix contains the operation part while the contents of the tag field select the index register used by the instruction. Positions 1 and 2 of Type A instructions are not both zero.

Bits 21-35 are called the *address* part of an instruction because their principal function is to indicate the storage address of the operand used by the instruction. Bits 3-17 are called the *decrement* part of an instruction because they may represent a number subtracted from the contents of an index register.

Figure 5 shows the form of a Type B instruction. Positions S, 1, 2, ...11, contain the operation part of Type B instructions, with the exception of the sense-type instructions. These are defined by the code ±0760, and the address part, since they do not refer to a location in storage. Positions 1 and 2 of all Type B instructions are both zero.

Numbers

Numbers are often referred to as data.

Fixed Point. Fixed-point numbers have a sign bit and a magnitude of 35 bits, as illustrated in Figure 6. (Example: The octal fixed-point number + 001367457632 appears in storage as 0 00 000 001 011 110 111 100 101 111 110 011 010.) Theoretically, assume the binary point to be to the right of position 35. However, by proper scale-factoring, the binary point may be placed anywhere in the

TYPE B INSTRUCTION (not sense-type)

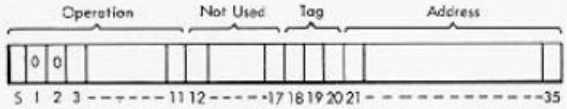


FIGURE 5

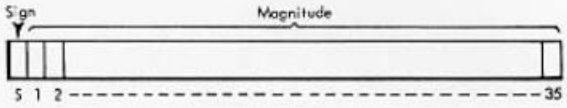


FIGURE 6

number. For example, 0 00 000 . . . 000 010 is equivalent to $1 \times 2^{+1}$.

Floating Point. A floating-point decimal number X may be expressed as a signed proper fraction N times some integral power of 10, or $N \times 10^{n}$. In the normalized case, the power of ten is chosen so that the decimal point is positioned to the left of the most significant digit of N. Examples:

±	X	=	±	N	×	$10^{\pm n}$
—	.010	=	—	.10	×	10^{-1}
+	.140	=	+	.14	×	10^{0}
+	4.600	=	+	.46	×	10^{+1}
—	88.000	=	—	.88	×	10^{+2}

Similarly, a floating-point binary number X may be expressed as a signed proper fraction B times 2^{b} where b is an integer. In the normalized case the binary point is positioned to the left of the most significant digit of B. Examples:

±	X	=	±	B	×	$2^{\pm b}$
—	.001	=	—	.100	×	2^{-2}
+	.100	=	+	.100	×	2^{0}
—	1.100	=	—	.110	×	2^{+1}
+	110.000	=	+	.110	×	2^{+3}

In the 704, a floating-point binary number is stored in a register as shown in Figure 7.

1. The magnitude of B is in bit positions 9-35. A floating-point binary number having a 1 in position 9 is said to be normalized, (i.e., $1/2 \leq |B| < 1$).
2. The sign of B is in the S position of the word.
3. Since the sign bit indicates the algebraic sign of the fraction and since signed exponents are desirable, the characteristic, C, of the number, instead of the exponent, is stored in positions 1-8. The characteristic of the fraction is formed

FIGURE 7

by adding +128 to the exponent. Thus, the range of the exponent is $-128 \leq b \leq 127$, while the range of the characteristic is $0 \leq C \leq 255$. (Examples: An exponent of −32 would be represented by a characteristic of $-32 + 128 = +96$. An exponent of +100 would be represented by a characteristic of $+100 + 128 = +228$).

CENTRAL PROCESSING UNIT

THE CENTRAL processing unit accomplishes all *arithmetic* and *control* functions. For any given instruction, the time used by the central processing unit to interpret the operation part of the instruction is called the *interpretation* time. The time required to execute an instruction is called the *execution* time. There is some time-sharing between consecutive intructions; that is, while one instruction is being executed, the next instruction is being interpreted, but this rarely concerns the programmer.

Storage Register (SR)

One special register, which will be referred to as the SR, is used for both arithmetic and control functions. Its operation is entirely automatic and will rarely concern the programmer. The SR has a capacity of 36 bits (one word) and serves as a buffer between core storage and the central processing unit. Some of the interpretation of an instruction is performed in the SR. It is also used in the execution of floating-point instructions.

Arithmetic Element

Accumulator (AC). The accumulator is a register with a capacity of 37 bits and a sign. See Figure 8.

Nearly every arithmetic operation involves the accumulator. In some operations (for instance, addition, shifting left) it is possible that the contents of the accumulator will overflow positions 1-35. When an overflow occurs, with the exception of overflow caused by the ACL instruction, the AC OVERFLOW indicator is turned on. Certain instructions permit the program to sense the condition of the overflow indicator while the program is being performed. The programmer may preserve some of the overflow information if he wishes. For this purpose, two extra bit positions, or overflow positions, are provided. These are designated the *P* and *Q* positions.

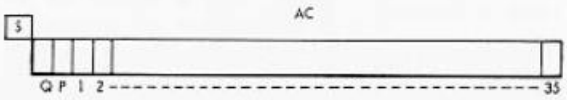


FIGURE 8

When two numbers having different signs but the same magnitude are added algebraically in the AC, it is important to know if the result is +0 or −0, since +0 is considered larger than −0. In this case, the sign of the result is identical to the sign of the number in the AC before the addition took place.

Examples: $+6 - (+6) = +0$.
$-6 + (+6) = -0$.

Multiplier-Quotient Register (MQ). The MQ is a register with a capacity of 35 bits plus sign. It has five major uses:

1. During the execution of every CPY instruction, the MQ is used as a buffer between core storage and any of the other storage media or input-ouput devices.
2. The multiplier must be placed in the MQ before the execution of a multiplication instruction.
3. After a division instruction is executed, the quotient appears in the MQ (the remainder appears in the AC). In fixed point division, the MQ contains the least significant half of the dividend.
4. After a multiplication instruction is executed, the MQ contains the less significant half of the product. In this connection, the MQ may be regarded as the right-hand extension of the AC; see Figure 9.
5. The least significant 35 bits of the results of FAD, UFA, FSB, and UFS instructions are in the MQ.

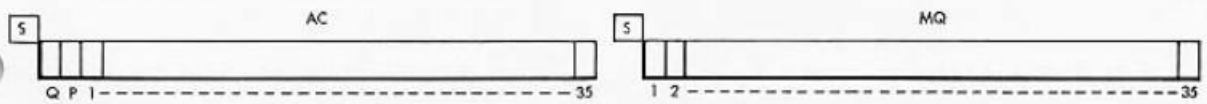


FIGURE 9

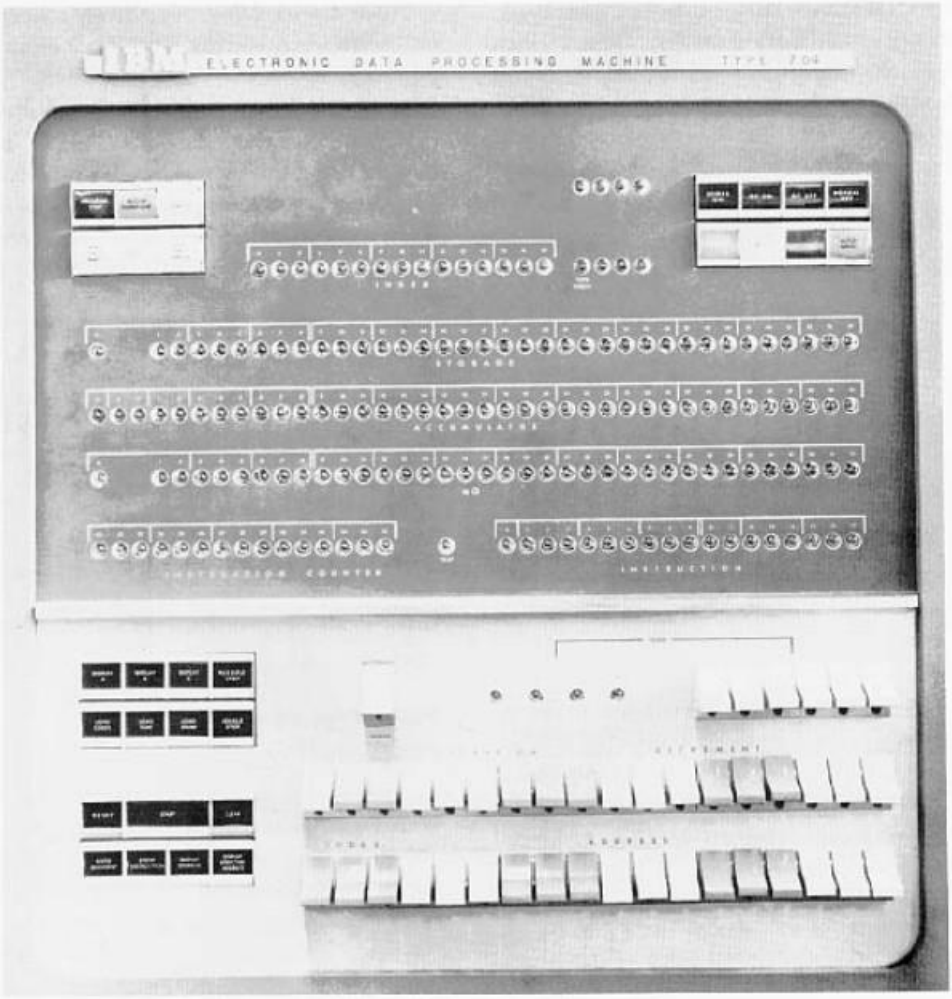


FIGURE 12

points in the program, giving sense instructions (explained under "Instructions") with the addresses of the sense switches causes the calculator to follow one of two courses, depending on which sense switches are depressed. The sense switches are also effective while the calculator is on MANUAL.

Panel Input Switches. There are 36 panel input switches, enabling the operator to insert a word of information into various registers of the calculator while it is on MANUAL. When a panel input switch is down, it represents a 1; when up, it represents a 0.

Index Display Keys. The three index display keys let the operator display the contents of any of the index registers, while the calculator is on MANUAL, by pressing the key marked with the letter corresponding to the index register in question. For example, to display the contents of index register A, the operator presses the key marked DISPLAY A; the contents of index register A then appears in the index lights. The index registers are automatically displayed until the calculator is returned to automatic operation.

Load Keys. The load keys let the operator initiate the loading of a self-loading program stored on binary cards, a drum, or on a tape. If a self-loading program is stored on the tape whose logical identifica-

A DETAILED description of each of the Type 704 components will be found in this section.

MAGNETIC TAPE UNITS

IN ADDITION to magnetic core and magnetic drum storage, ten Type 727 tape units with an associated control unit are available on the 704. These tape units are compatible with the tape units used on the Types 702 and 705 EDPM.

Each tape unit may contain a half-inch-wide oxide-coated plastic tape up to 2400 feet long on which information is stored as bits in the form of magnetized spots. The mechanism (read-write head) that reads or writes information on the tape is preceded by an erase head which erases the tape prior to writing, but *not* while reading. Hence, the same tape may be re-used many times by writing new information on it.

The reading, writing, and backspacing speed of the tapes is 75 inches per second. The longitudinal density of the tapes is 200 bits per inch. Reading or writing is done at the rate of 2500 words per second after the tapes are placed in motion. Tapes are read or written in a forward direction only; but the same tape may be written, backspaced, read, backspaced and written again in that order. Thus a record may be written and then read for checking purposes before writing the succeeding record.

The normal rewinding speed of the tapes is 75 inches per second if the length of tape to be rewound does not exceed 450 feet. The tape unit automatically measures the length of tape to be rewound. The time for a high-speed rewind of a reel of tape of any length from 450 to 2400 feet is nearly constant (about 1.2 minutes, allowing for acceleration and deceleration time).

Reflective spots on the tape, made of adhesive aluminum stripping, are photo-electrically sensed to indicate the load point and the physical end of the tape, as indicated in Figure 18.

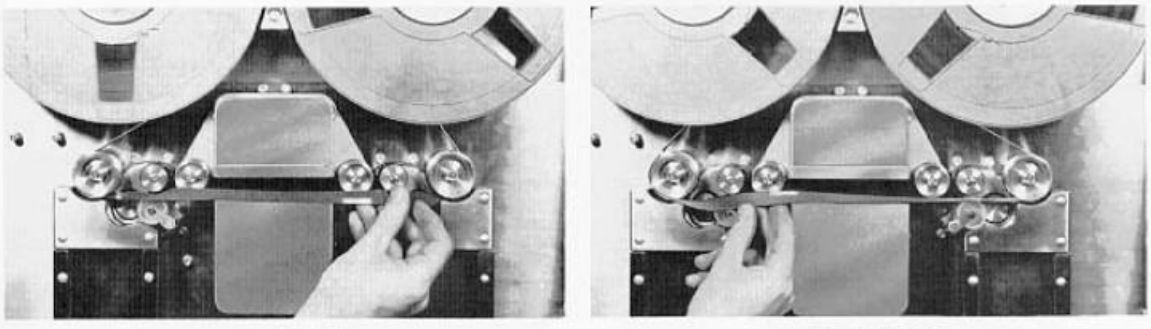
Operating Modes

Peripheral equipment (card-to-tape, tape-to-card, and tape-to-printer) requires information to be stored as binary-coded decimal (BCD) characters. Therefore, the 704 operates in two distinct modes, depending on the address used to select the tape unit:

MODE	OCTAL ADDRESS	DECIMAL ADDRESS
BCD	201-212	129-138
Binary	221-232	145-154

When operating in the binary mode, the calculator reads or writes words without altering the bit pattern during transmission. When reading or writing in the BCD mode, the calculator alters the form of some of the BCD characters during transmission from or to the tape. See "Character Alteration in BCD Mode."

Six bits make up one BCD character. Hence six BCD characters, comprising 36 bits, are transmitted with one copy and skip (CPY) instruction.



Load Point *Physical End*

FIGURE 18

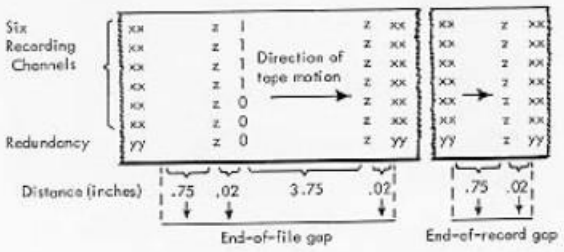
Physical Arrangement of Information on Tape

A ¾-inch blank space on the tape defines the *end of a record* of information. A 3.75-inch blank space, a tape mark followed by its redundancy character, and an end-of-record gap define the *end-of-file* of information (Figure 19). A tape may contain more than one file, and a file may contain any number of records. Each record contains an arbitrary number of words.

During a write operation, six bits and a redundancy check bit are recorded laterally across the tape. The lateral redundancy check bits are automatically placed on the tape to cause an even or odd number of binary 1's in each lateral row of tape for the BCD or binary mode, respectively. Also, at the end of each record written, a longitudinal redundancy check bit is placed automatically in each of the seven channels to cause an even number of binary 1's in each channel of that particular record. The longitudinal check is *always* an even check.

If information stored on a tape in the BCD mode is read in the binary mode, the tape-check indicator and corresponding light on the operator's console go on (because the lateral check bits are different), and the information is transmitted to storage *in unaltered form*. If a binary tape is read in the BCD mode, the tape-check indicator and light turn on, and the information is transmitted to storage in *altered form*.

In Figure 19, the tape is moving in the direction indicated by the arrows. Each y corresponds to the redundant bit for each six bits (x's) stored laterally, and each z corresponds to the redundant bit for each channel of the preceding record. The tape mark in the end-of-file gap has its own longitudinal check bits .020 inch beyond the tape mark. These check bits are identical to the tape mark—the special character 0001111_2.



Writing

The programming needed to write a record is write select (WRS) Y (Y denotes the tape unit and mode of checking), followed by a CPY instruction, to be repeated as many times as there are words in the record. This iterative procedure is known as a copy loop. After interpreting the first CPY, the calculator automatically delays its execution if the tape is not yet positioned to transmit the first word.

The WRS Y instruction starts in motion the tape designated by Y and selects the checking mode. If the copy loop is terminated, i.e., the calculator fails to receive a CPY within 336 microseconds (μs) of the preceding CPY, the calculator writes the longitudinal check bits and end-of-record gap and disconnects the tape unit. If another CPY is given after the tape is disconnected, the calculator will stop with the read-write check light turned on.

When a tape is written, the MQ cannot be used for computing between successive CPY instructions, or for 500 μs after the final CPY execution. The delay instruction, WRS 333s delays any instruction execution until the MQ is free.

Write End of File

The write end of file (WEF) causes the tape to erase an end-of-file gap and write a tape mark plus the corresponding longitudinal check bits. The calculator disconnects the tape immediately upon interpretation of the WEF instruction; hence, the MQ is free for computing while this instruction is executed. No tape instruction may be executed for 50 milliseconds following a WEF instruction.

To write more than one file of information, it is only necessary to write an end of file after writing the first file of information. At any later time, the first record of the second file of information can be written.

Reading

The execution of an RDS instruction starts the tape in motion, selects the checking mode, and clears the MQ. If the MQ is used for computing between the RDS and the first CPY, it must be cleared by the program before the first CPY instruction is given. After a CPY Y, during the reading loop, the word read into

The select light is turned on only when the calculator selects the tape unit. The tape unit is in ready status (the ready light is on), provided the tape is loaded into the columns, the reel door interlock is closed, and the tape unit is not in the process of finding the load point (rewind or load operation). Manual control is indicated when the ready light is off, provided the tape unit is not rewinding or loading and the reel door is closed.

Pressing the start key places the tape unit under control of the tape control unit (and, indirectly, the calculator) and causes the ready light to be turned on, provided the tape unit is in ready status. Pressing the reset key removes the tape unit from the calculator's control. It turns off the ready light, and resets all controls to their normal positions. It also stops any tape operation which has been initiated (except high-speed rewind, which will revert to low-speed rewind). After the tape is loaded into the vacuum columns and low-speed rewind is in progress, the reset key may be pressed again to stop the low-speed rewind.

When the door is open, the reel door interlock prevents operation of the reel drive motors. If the reel door is closed and the ready light is off, pressing the load-rewind key causes a fast rewind at the end of which the tape is loaded into the vacuum columns and searched in a backward direction for the load point. Pressing the unload key causes the tape unit to remove the tape from the vacuum columns and raise the head cover, regardless of the distribution of the tape on the two reels. If the tape is not at the load point when the operator wishes to change it, he starts a load point search by pressing the load-rewind key.

The tape indicator light is turned on when the tape breaks or when the physical end of the tape is reached during a writing operation. The program is allowed to complete the writing operation when the end of the tape is reached. If the program selects the tape for reading or writing after the tape indicator light is turned on, all calculation is stopped and cannot be resumed until the reset key on the operator's console is pressed.

The tape indicator light is turned off by pressing the reset key on the tape unit and then pressing the unload key on the tape unit.

The plastic tape reels are 10½ inches in diameter.

FIGURE 21

They are designed so that the front and back sides of the reel are different (Figure 21). In normal operation, a special ring is inserted in a groove in the back side of the reel to depress a pin which is then under spring tension. If the special ring is removed from the reel, the pin rides freely in this groove and a writing interlock is automatically set. Also, the file protection light is turned on to inform the program that it is impossible for the program to write on the tape. However, this tape may be read, backspaced, or rewound freely when the file protection light is on.

MAGNETIC DRUMS

IN ADDITION to magnetic core and magnetic tape storage, two Type 733 magnetic drum units are available for the 704. Each magnetic drum unit has a storage capacity of 8192 words, each word consisting of 36 bits. A drum unit contains two distinct physical drums, each with a storage capacity of 4096 words.

Each physical drum consists of two logical drums whose octal addresses are indicated in Figure 22. Each logical drum has a storage capacity of 2048 words.

A logical drum is selected by giving the appropriate address 193-200 or 301-310 octal.

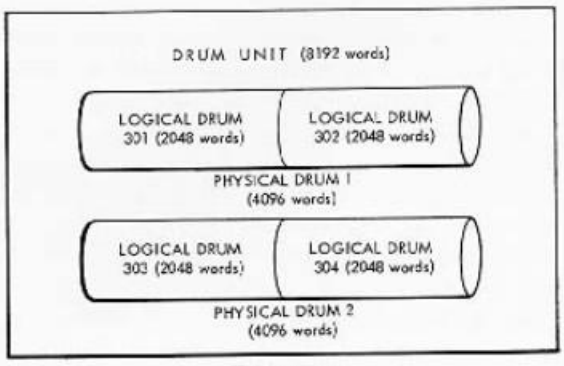


FIGURE 22

Physical Arrangement of Words on Drum

The 2048 locations on each logical drum can be individually addressed by integers in the range 0000-2047 decimal (0000-3777 octal). A record (block) of words is normally stored on a drum in sequentially numbered locations. The programmer must indicate the drum address where the first word of the core storage record is to be written on or read from the drum. The number of CPY instructions executed in the copy loop determines the number of words in the record.

Figure 23 illustrates the physical arrangement of words on a logical drum. The addresses are numbered octally. Observe that, when reading or writing a continuous record, the calculator refers to every eighth word of the drum for consecutive addresses.

Each logical drum has 256 sectors. Therefore, it must make eight complete revolutions for all 2048 words to be read or written as a continuous record.

NOTE: Drum sectors are numbered from 000 to 255 (000 to 377 octal). The eight least significant binary positions of the drum address of a word determine the number of a drum sector where a word is stored.

Reading and Writing

Because 96 μs are needed to read or write one word, successive words are written on or read from the drum at the rate of 10,000 words per second. A drum read select (RDS) Y or write select (WRS) Y selects one of the eight logical drums indicated by the address Y and connects it to the calculator. The drum then remains indefinitely selected waiting for a locate drum address (LDA) instruction. (If an LDA is not given, then the drum remains selected waiting for the first CPY.

The 11 least significant bits of the address part of the C(Y) in the LDA Y instruction specify the initial drum location of the record. If an LDA Y is not given, the first CPY refers to the drum address 0000. The automatic address counter for the drum has only 11 binary positions. Hence, if a 38-word record begins at 2040, the last word of the record is found at location 0029.

Following an LDA, the first CPY must be given within 36 μs (three cycles); otherwise, the drum may disconnect. The LDA is an indexable instruction.

When information is written on a drum, the execution of a CPY Y instruction causes the word at location Y in core storage to be loaded into the MQ from which it is transmitted to the drum. During a reading operation, the execution of a CPY Y instruction causes the word from the drum to be loaded into the MQ from which it is transmitted to location Y in core storage. The MQ cannot be used for computing during the copy loop.

Between successive CPY's, three cycles (36 μs) are available for programming (excluding the CPY itself). When a CPY is not given within three cycles of the preceding CPY, the drum disconnects. If a CPY is given after the drum has disconnected, the calculator stops with the read-write check light on.

Table IV shows the minimum time T between the execution of the RDS or WRS and the LDA (or first CPY if no LDA is given). During this entire time T, the calculator is available for computing. However, if any portion of time T is not used for calculating, the calculator delays the amount of time which is the difference between T and the time used for calculating during this period.

Drum Motion Time

The minimum time between the execution of the last copy of record x and the execution of the first CPY of record $x + 1$ is A, D, or $\bar{A}$ (Table IV). The average access time A is 12.29 ms, although it may be as high as 24 ms.

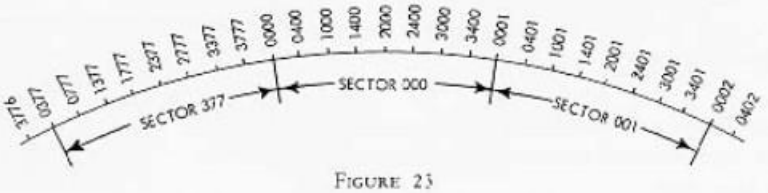


FIGURE 23

PREVIOUS INSTR.	CURRENT INSTR.	T (in ms)	ROTATION TIME (in ms)
RDS 301 or 302	RDS 301 or 302	0.5	D (or A if insufficient information is available to use the formula for D)
RDS 301 or 302	WRS 301 or 302	15.0	
WRS 301 or 302	RDS 301 or 302	15.0	
WRS 301 or 302	WRS 301 or 302	15.0	
RDS 301 or 302	RDS 303-310	0.5	$\overline{A} = A + D'$
RDS 301 or 302	WRS 303-310	15.0	$\overline{A} = A + D'$
WRS 301 or 302	RDS 303-310	15.0	$\overline{A} = A + D'$
WRS 301 or 302	WRS 303-310	15.0	$\overline{A} = A + D'$

TABLE IV

To compute D, divide the difference between the final drum address in the preceding record and the initial drum address in the current record by 256; the quotient Q and remainder R appear in the formula $D = .012Q + .096R$. (This formula is used in computing the rotation time when the physical drum selected is the same as the last one used.)

To compute $\overline{A}$, divide the initial drum address by 256; the quotient Q' and remainder R' appear in the formula $D' = .012Q' + .096R'$. (This formula is used in computing the rotation time when the physical drum selected is different from the last one used.)

The computed rotation time is valid only when A, D, or $\overline{A} > T + .12$ ms.

Multiple Record

Because one drum revolution requires 24 ms, it is possible to read multiple records during a single revolution if the words to be read are stored on one physical drum in an optimal way. If the last CPY of the first record is followed immediately (within three cycles) by an RDS selecting the same physical drum, the LDA may be given for a drum address that is at least eight sectors beyond the drum address of the last word in the preceding record. Six sectors are passed over during execution of RDS and one sector is passed over during execution of LDA. An additional sector must be added for each 84 μs, or portion thereof, beyond the allowable 500 μs of programming between the RDS and the LDA instructions.

For an example, assume that a record is written on a drum where the last word of the record is stored in location 0200_{10}. We wish to know the earliest sector in which to place the first word of the next record so that both records can be read during the same drum revolution when there are (a) 700 μs of programming between records, (b) 840 μs, (c) 500 μs or less.

(a) $700 \div 84 = 8 +$
$= 9$ sectors for computing
1 sector to execute LDA
10 sectors to be skipped
Next record can begin at 0211_{10}.

(b) $840 \div 84 = 10$ sectors for computing
1 sector to execute LDA
11 sectors to be skipped
Next record can begin at 0212_{10}.

(c) The minimum sector allowance is seven sectors (this includes the sector necessary for the LDA).
Next record can begin at 0208_{10}.

PUNCHED CARDS

IN THIS MACHINE, IBM cards are intended to be the primary input medium because of their great flexibility and because of the availability of apparatus for key-punching, verifying, and duplicating. Errors are easily detected and corrected, input data may be readily prepared on several key-punches simultaneously, and the cards may be collected before entry into the computer. Cards are particularly desirable when one wants to have manual access to a file. They can be easily separated. Their contents may be printed on them. It should be emphasized that the punched card input and output may represent any alphabetic character or special symbol, provided only that a program exists to recognize the IBM code for this information. A program may also provide for quantities to be represented in any number system and read or punched accordingly.

Entering a program on cards may be done in such a way that instructions are punched, one to a card, in the form most desirable to the programmer (e.g., in decimal notation). The computer can then be supplied with a standard program to assemble the instructions in the desired order. Then, if errors are detected or if changes must be made, the wrong cards are removed, the correct ones (not necessarily the same number of cards) are added, and the computer prepares the new program. Note that there is no need to repunch any but the cards in question.

The card-feeding mechanism in the card reader is similar to that in the Type 402 Accounting Machine and includes two sets of 80 reading brushes. Correspondingly, there are 80 punching magnets and 80 punching brushes in the card punch. Only 72 columns of the standard IBM card, however, can be read into core storage, and only 72 columns can be punched from core storage (unless split-column wiring is used). Any 72 columns of the card can be selected through control panel wiring. For simplicity in the following discussion, assume that columns 1 to 72 of the card are used for both reading and punching.

Binary information is represented on a card as follows: each of the 12 rows of the card is split into two parts, the left half consisting of columns 1 to 36 and the right half of columns 37 to 72; each half row can be treated as a 36-bit word and read into a location in core storage.

Figure 24 shows how the card is divided. In this particular example, the first 72 columns of the card are used. Each of the rows is split into half-rows of 36 columns each. Thus, the half-row identified by the circled 9 is named the 5-row left. Similarly, the row identified by the circled 10 is named the 5-row right. Thus, there are 24 half-rows in the card. One full word of binary information can be punched in any half-row (including sign). The machine regards any punched hole as a binary 1. "No punch" indicates a binary 0. Thus, an 8-punch in column 36 of the card is regarded by the machine as a binary 1 in the least significant position of the binary word punched in the 8-row left. The leftmost position of each half-row is reserved for the sign bit of the word. A binary 1 represents a negative sign, while a binary 0 represents a positive sign.

NOTE: The exact position of a word that each column represents is completely arbitrary according to how the particular control panel is wired.

Observe that this card representation of 24 binary words does not mean that the cards must always be punched with true binary information. The holes in the card can just as well be numerical punching in the standard decimal card code, alphabetic punching,

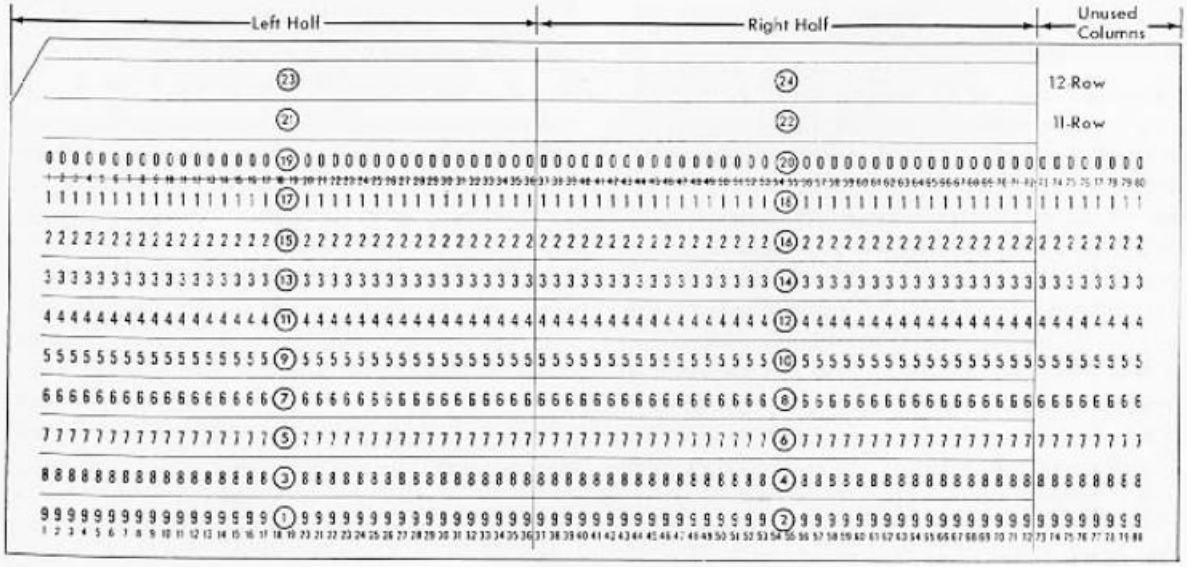


FIGURE 24

or control punching. It is necessary only to provide a suitable program for the computer to translate between the binary code in which it operates and the particular code used on the card. The translation to and from the decimal numerical code, for instance, can proceed simultaneously with reading and punching so that the over-all card-handling speed is not reduced below the standard rates of 150 or 250 cards per minute for reading and 100 cards per minute for punching.

Feed cards face down, 9's edge first, in *both* the card reader and card punch. The internal card circuits are arranged so that the 24 half-rows of the card are read or punched in the sequence indicated by the circled numbers in Figure 24. The sequence of reading or punching full words is then as follows: 9-row left, 9-row right, 8-row left, 8-row right, and so on to 12-row left, 12-row right.

For reading and punching cards, a unit record is defined as the information contained in *one* card. A file consists of any number of unit records. It takes the form of a deck of cards. Note that definitions of unit records and files are usually different, depending on the particular input or output component being discussed.

CARD READER

EITHER one of the two Type 711 card readers, model 1 or model 2, can be used on the 704. The model 1 reads cards at the rate of 150 cards per minute, the model 2 reads cards at the rate of 250 cards a minute. The principal difference is found in the timing section.

For a program to cause the calculator to read all of the information punched on a card into core storage, it is necessary to give an RDS instruction with an address of 209 (card-reader identification) followed by 24 CPY instructions.

The RDS instruction causes the card-feeding mechanism to start in motion. The program then is free to continue any operations until the 9-row of the card appears under the reading brushes. At this time, the program must provide a CPY Y which causes the word punched in the 9-row left to be read and stored in core storage location Y. The program can then resume until the calculator is prepared to read information punched in the 9-row right. The program now must supply another CPY instruction to read this word into core storage. This procedure continues until all 24 half-rows have been read. Because of their functions, these CPY instructions are called 9 left CPY, 9 right CPY, and so on. Another RDS must be given to read another unit record (card).

The RDS instruction can be given, followed immediately by the 24 CPY instructions in succession, without any other operations being done between instructions. In such a case the calculator waits automatically until a half-row is in position to be read before executing the CPY instruction.

The intervals of time between these instructions which may be used for useful calculating are definitely limited and are completely specified below. If a CPY is given *after* the card reader is in position to read a given half-row, the machine stops, and the read-write check light turns on at the operator's console. The amount of calculating time available between the last CPY instruction for a given card and the RDS instruction that initiates the reading of a succeeding card is unlimited. But if an RDS instruction does not occur within a definite time limit, the card reader stops. It will start up only after the new RDS instruction has been received. To keep the card reader in continuous motion and operating at its full speed of 150 or 250 cards per minute, the time limits discussed below must be observed.

Calculator operation is such that during execution of a CPY, the word read from a half-row of the card first enters the MQ before being sent to core storage. This, of course, destroys any information previously stored in the MQ.

If a 25th CPY instruction is given after an RDS instruction, the card reader will already have set up an end-of-record condition (denoting that all 24 half-rows of the card have been read). Under this condition, the 25th CPY is not executed, and the program skips to the *third* instruction after the CPY. In this way the program may transfer control to a section that will cause the succeeding card to be read.

When the hopper of the card reader becomes empty, the calculator stops. Depress the start key on the card reader to allow the cards remaining ahead of the reading station to be read under control of the program. After the last card has been read in this way, and if another RDS instruction followed by a CPY is given, the card reader sets up an end-of-file condition. Under this condition the CPY instruction is not executed,

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REACTOR TECHNOLOGY

PATHFINDER ATOMIC POWER PLANT

SUPERHEATER TEMPERATURE EVALUATION ROUTINE

An IBM–704 Computer Program

by
William B. Ross

Submitted to

U. S. ATOMIC ENERGY COMMISSION
NORTHERN STATES POWER COMPANY
and
CENTRAL UTILITIES ATOMIC POWER ASSOCIATES
by
ALLIS-CHALMERS MANUFACTURING COMPANY

Under
Agreement dated 2nd Day of May 1957, as Amended
between
Allis-Chalmers Mfg. Co. & Northern States Power Co.
under
AEC Contract No. AT(11-1)-589

October 31, 1961

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PATHFINDER ATOMIC POWER PLANT SUPERHEATER TEMPERATURE EVALUATION ROUTINE

An IBM-704 Computer Program

By
William B. Ross

October 31, 1961

Allis-Chalmers Manufacturing Company
Milwaukee, Wisconsin

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ABSTRACT

A computer program was written for analysis of steam flow and heat transfer in fuel elements consisting of concentric fuel tubes with several annular coolant-flow channels. Performance of both average and hot-channel fuel elements may be evaluated since, for any heat generation rate, either total coolant flow rate or overall pressure drop may be specified. The heat split from the fueled volume, thermal coupling between coolant channels, and heat loss from the fuel element are considered. Although any one run investigates only a single fuel element, any number of parallel fuel elements may be analyzed in successive runs by assuming that the pressure drop across the core is equal to the pressure drop across the nominal fuel element. Although written for inlet saturated steam at 615 psia, the program can be easily modified for use at any inlet condition. The program may be used on any 8K core IBM 704 computer. No tapes or drums are required. Typical running time for a problem composed of three flow channels, two fueled volumes, and four heat transfer surfaces, is approximately 2.5 min.

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I. INTRODUCTION

The analysis of the heat-transfer and fluid-flow problem in fuel elements with parallel channels requires, in general, a complex trial and error solution. Only in its most simplified form can an exact solution be obtained. When more than two parallel channels are to be analyzed, and when inter-channel heat transfer is considered, the problem becomes quite formidable.

The Pathfinder superheater fuel element (Figure 1) is composed of three annular coolant flow channels separated by two tubular fueled volumes. The fuel element assembly includes a central burnable poison pin. The assembly is inserted in a double-walled insulating process tube. The components are concentrically spaced.

In order to establish the design of the element, it was necessary to analyze the performance of the average and so called "hot-channel" elements. The Superheater Temperature Evaluation Routine (STER) was

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FOREWORD

An IBM-704 computer program was written to determine heat transfer and pressure-drop characteristics of fuel element designs proposed for the integral nuclear superheater of the Pathfinder reactor. The resulting code, which is described in the following report, is designated the Superheater Temperature Evaluation Routine (STER).

The programming of this code was undertaken as part of the research and development program for the Pathfinder Atomic Power Plant, which is a 66-mwe plant that will be owned and operated by Northern States Power Company of Minneapolis. The plant will be built near Sioux Falls, South Dakota and is schedule to become critical in mid-1962.

Contributing toward the research and development program are the Atomic Energy Commission and Central Utilities Atomic Power Associates, a group of ten midwestern public utility companies. CUAPA members include the following: Central Electric and Gas Company, Interstate Power Company, Iowa Power and Light Company, Iowa Southern Utilities Company, Madison Gas and Electric Company, Otter-Tail Power Company, St. Joseph Light and Power Company, and Wisconsin Public Service Corporation.

Allis-Chalmers Manufacturing Company is prime contractor for design and construction of the plant. The plant will incorporate the Controlled Recirculation Boiling Reactor with Integral Nuclear Superheater.

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written for an 8K IBM 704 electronic digital computer in order to facilitate this work.

2. DESCRIPTION

The STER code was written assuming a coolant channel consisting of an upper inlet region, a multi-channel fueled region, and a lower exit region, as shown schematically in Figure 2. The multi-channel fueled region is composed of concentric fuel tubes. A central rod and/or outer process tube may be specified. The central rod may or may not be fueled. Provisions are made for fueling the outer tube giving consideration to certain code limitations, as specified in Appendix A.

The inlet and exit regions are used in calculating pressure drops above and below the fueled section. These regions are assumed to be isothermal. Hence, no heat transfer calculations are performed in these regions. As the fluid passes from the inlet to the fueled section, a contraction pressure drop is calculated. Similarly, as the coolant passes from the fueled section to the exit section, an expansion recovery is calculated.

Fuel elements consisting of up to four annular fueled regions, eight heat-transfer surfaces, and five parallel coolant-flow channels may be analyzed. Figures 3 and 4 illustrate maximum geometric configurations and indicate the radial component subscripts used.

Heat transfer calculations are performed only in the fueled region. The fueled length is divided into 180 equal increments (181 points). An estimate of the wall temperature at the first axial position (n=0), is made by multiplying the inlet bulk temperature by

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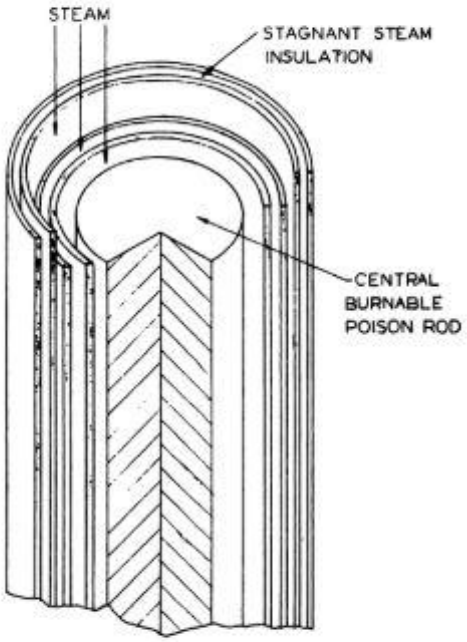

Figure 1. Cutaway section of Pathfinder superheater fuel element. (AC Dwg. 43-024-617)

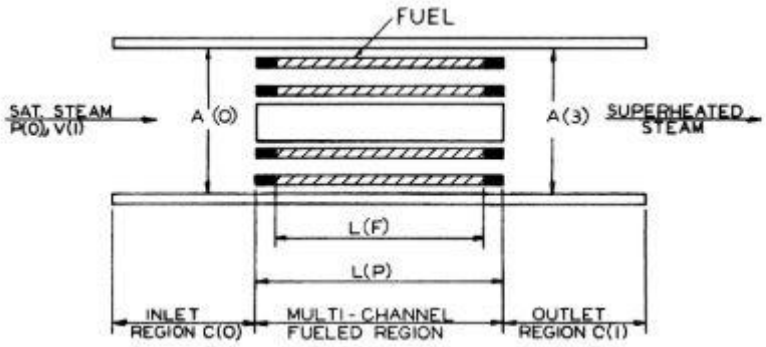

Figure 2. Schematic of coolant multi-channel. (AC Dwg. 43-024-616)

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1) Ready card reader

2) Press clear button

3) Press load cards button

6. SENSE SWITCHES

Sense switch 1 determines the problem convergence criteria. The code continues iterating until

$$\text{PREQ} = 0 \qquad \frac{\Delta P_{max} - \Delta P_{min}}{\Delta P_{max}} \leq \epsilon$$

$$\text{PREQ} \neq 0 \qquad \frac{\text{PREQ} - P_2}{\Delta P_2} \leq \epsilon$$

$$\text{AND} \qquad \frac{\Delta P_{max} - \Delta P_{min}}{\Delta P_{min}} \leq \epsilon$$

where $\epsilon = .00025$, SW 1 up

$\epsilon = .05$, SW 1 down

When sense switch 2 is placed down, the results are printed at the end of the iteration then in progress. No temperature profiles are printed out. At the end of the printing, the program calls for new data cards to be read in. If a card with a 12-punch in card column 1 is present, the machine will iterate again before printing out. Thus, to print the results after each iteration, sense switch 2 must be down and a supply of 12-punch only cards must be in the card reader. Normal operation may be resumed by placing sense switch 2 up and print out will occur after convergence criteria are satisfied. However, in order to print out the temperature profile, a value for PR MOD must be read in with the 12-punch card.

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and the remaining 2 card columns are the characteristic. Fixed-point notation consists of a five digit field followed by a decimal point (or blank) and two zeros. The following example will help to illustrate.

13	25	37	49	61	73	80
00033275000600593287000200400020.00000700004.00					Label	

QBAR = $.3275 \times 10^{6}$

A (0) = $.3287 \times 10^{-2}$

PR MOD = 20

NO EQU = 4

Data words must begin in card columns 1, 13, 25, 37, 49, and 61. It is not necessary to completely fill out a data card. Cards will continue to be read into the machine until a 12-punch is encountered in card column 1 of a data card. Once that card has been read into the machine, control is transferred from the data reading routine and the calculations are begun. Any number of sets of data may be included in the data deck but the end of each problem set must be defined by a 12-punch in column 1 of the last card. Once data is read into storage, it will be retained there for use in future problems unless it is read over or the machine is cleaned. A sample problem is given in Appendix F.

5. MACHINE OPERATING INSTRUCTIONS

The binary object deck, followed by a data deck consisting of at least one full set of data and three blank cards are placed in the card reader hopper. The sense switches are set. Normal operation with on-line printing occurs when all sense switches are up.

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MASTER

ALLIS-CHALMERS MANUFACTURING COMPANY
ATOMIC ENERGY DIVISION
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PATHFINDER ATOMIC POWER PLANT

IBM–704 PROGRAM FOR REACTOR CONTAINMENT

Pressure Suppression Analysis

July 15, 1960

This report covers work performed under Allis-Chalmers Manufacturing Company's Purchase Order No. WA-491284-NSP, a part of the research and development program under AEC Contract No. AT(11-1)-589 with Northern States Power Company.

by

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When sense switch 4 is up, results are printed on-line. If sense switch 4 is down, results are printed on logical tape number 2. Results may be printed on any logical tape unit by modifying the instruction in octal location 02162 to read "076600 000 xxx" - where xxx refers to the correct tape unit octal address in the BCD mode of operation. (See page 31, IBM 704 Reference Manual.)

7. EQUATIONS

7.1 Heat Transfer

The basic heat transfer equations used by the code are:

$$T_{wall} = T_{in} + F(B)\,\Delta T_{bulk} + F(PHI)\,\Delta T_{film}$$

where

$$\Delta T_{bulk} = \frac{\bar{Q}}{Wcp} \int_o^x \varphi dx$$

and

$$\Delta T_{film} = \frac{\bar{\bar{Q}}_n \varphi_i}{A_n h}$$

The actual equations used by the code itself are considerably more complex in order to account for inter-channel heat transfer. All equations used by the code in their exact form are present in Appendix G.

7.2 Pressure Drop

$$P_{out} = P_{in} - \Delta P_{inlet\ region} - \Delta P_{multi\text{-}channel} - \Delta P_{exit\ region}$$

where,

$$\Delta P_{inlet} = C(1) W_T 2 v(0)$$

$$\Delta P_{exit} = C(2) W_T 2 v(3)$$

$$\Delta P_{m\text{-}c} = \Delta P_{contraction} + \Delta P_{acceleration} + \Delta P_{friction} + \Delta P_{expansion}$$

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ABSTRACT

A research and development program to investigate the feasibility of eliminating vapor closure for the Pathfinder reactor was conducted. The investigation was undertaken as part of the research and development program for the 66-mwe Pathfinder Atomic Power Plant, which will be owned and operated by Northern States Power Company of Minneapolis. The plant is being built near Sioux Falls, South Dakota and is scheduled for initial operation in June 1962. Contributing toward the research and development program are the Atomic Energy Commission and Central Utilities Atomic Power Associates, a group of ten midwestern public utility companies. Allis-Chalmers Manufacturing Company is prime contractor for design and construction of the plant.

The major inquiry under the feasibility study involved an analysis of the complex transient conditions occurring in the reactor cavity, the pump rooms, and the entire reactor building following a primary system rupture. To solve the simultaneous non-linear set of equations evolving from the heat, mass, and force balances in the system, an I.B.M. 704 digital computer program was developed. The program has a very general input and can therefore be used with other containment designs. Input parameters include: Initial pressures in reactor and throughout the containment building, heat capacity of vessel, decay heat, feedwater flow rate, enthalpy of feedwater, and volume of primary coolant system.

1.0 INTRODUCTION

The Pathfinder Nuclear Power Plant[1] consists of a heterogeneous light water cooled and moderated forced circulation direct cycle boiling water nuclear reactor and a light water moderated integral nuclear superheater.

An early reference design utilizes a cylindrical containment vessel as depicted by Figures 1.A and 1.B.

Early in the Pathfinder research, development, and design program the desirability of pressure suppression containment was recognized. Such containment is designed so that in the unlikely event of primary system rupture the steam released would be condensed in quenching pools and on the walls of the reactor cavity and pump rooms.

Previous exploratory calculations by Pioneer Service and Engineering Company[5] and Allis Chalmers[4] indicated that compartmentalized building design combined with provisions for quenching steam with shield pool water might reduce to a nominal value the pressure in the reactor building resulting from a primary loop rupture. Under purchase order WA491284-NSP Internuclear Company was retained to study further the feasibility of elimination of containment of a nuclear power plant and to develop adequate engineering calculations and concepts necessary to support such a study.

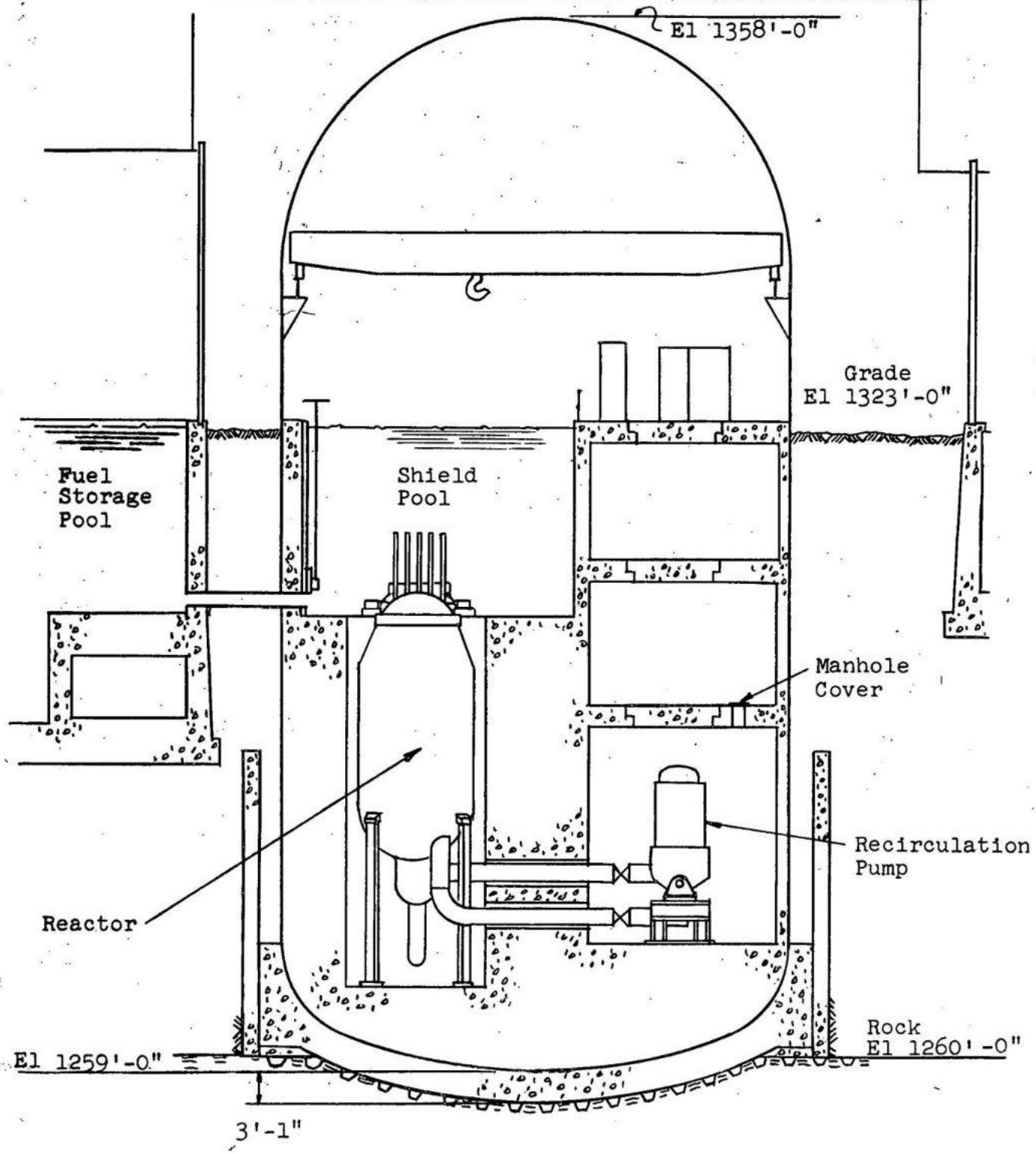
A preliminary analysis of the transient conditions which might occur in the reactor cavity, the pump rooms and the entire reactor building during the first few minutes after rupture showed that simultaneous time dependent solutions of a number of partial differential equations would be required to adequately study the feasibility of reducing containment.

Further investigation of the problem indicated that the mechanisms by which steam from a primary loop rupture would be condensed on compartment walls, building walls, and in the shield pool are not well understood nor is adequate empirical data as a function of turbulence, velocity degree of superheat, and pool depth available.

In order to accomplish an integrated and supported study it was deemed desirable to first develop the capability to analyze several possible geometric configurations under several possible mechanisms of steam condensation in quenching pools and on building walls. The number of possible permutations and combinations together with the desirability of observing the time dependence of the pressure in the various compartments and in the reactor building indicated the need for an electronic computer code.

Figure 1.A

Structural Concept of Steel Cylinder Reactor Building



Development of such a code has progressed to the point that its feasibility is unquestioned and its usefulness has been established.

The analytical tools are now available to predict transient pressures in the various compartments of any reactor building and in the free volume of the building itself.

In Section 3.0 recommendations are presented for a program designed to establish beyond a doubt the safety and reliability of pressure suppression containment.

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2.0 SUMMARY AND RESULTS

Using methods developed by Ketchum[2], the largest hole that results from a ductile rupture of the primary system of the reference design has been shown to be 4.1 inches in equivalent diameter.[3] In such a breach of the primary system, the stored energy of a rapidly released coolant will lead to a pressure rise peaking in a short time and then decaying through heat transfer to the contained air and structure.

Thermodynamic treatment for expansion into a containment structure of a compressed liquid vapor system has been given by J. C. Heap[3]. Results, relating pressure in the containment structure to containment volume required per pound of saturated liquid, are shown by Figure 2.A. Applying these results to the reference design Pathfinder Plant the maximum pressure buildup due to coolant expansion is ~80 psi. (Containment free volume 112,000 ft^3, coolant mass in vessel 89,800 lbs.)*

In calculations by Allis Chalmers and Pioneer Service and Engineering Company[4,5] the maximum pressure rise is shown to be about 15 psi for a 6 inch rupture. (Results are shown in Figure 2.C). In these calculations the condensation on the walls is shown to quench the steam and thereby greatly reduce the pressure buildup from the approximately 80 psi theoretical pressure rise with no condensation.

To corroborate and extend these results, and IBM-704 program, described in Appendices A1.0 and A2.0 was written to determine the pressure buildup due to a break in the primary loop. In the program the method of analysis approximates the actual time solution of the partial differential equations by a set of finite difference equations which are solved in a series of time steps. The assumption is made that the time steps are small enough so that the quantities involved do not change appreciably during the time step. These equations are solved explicitly for water volumes at each time increment and system pressures are determined implicitly as time dependent variables. Thermodynamic equilibrium is assumed at any time after the rupture. This is essentially true for a small rupture causing extended blowdown.

The pressure transient program was successfully run up to a time of 44 seconds following rupture. Results are shown plotted in Figures 2.D, 2.E, and 2.F. The pressure versus time in the reactor and building compartments are shown by Figures 2.D and 2.E. The coolant flow out of the rupture in the primary system is plotted versus time in Figure 2.F. The pressures in the reactor building compartments after 22 seconds when the dampers close and at 44 seconds are as follows:

* Private Communication, D. Mohr, 3 April, 1959.

A2.1 Main Program

1. Read input cards.

2. Point input on line (SS 6 down)
   Write input on tape 2 (SS 5 up)

3. Initialize NUM = 0 (counter for on-line printing)
   Set ASTAR = 2.0 (to bypass first test of water level in core)

4. Set sense lights 1 and 2 on for later use in subroutine RESIST

5. Call steam table quantities for 10 values of PO(I) (Use Subroutine STEAM)

6. For initial pressure guess at end of time step (P1(I)) let P1(I) equal PO(I).
   Also let new density of air (RHOA1) = old density of air (RHOAO)

7. Call RESIST to see if flow path resistances must be changed - if necessary - then they are changed.

8. Increase time.

9. If temperature inside reactor is less than feedwater temperature, reduce the feedwater enthalpy (HFW).

10. Change name of pressures for use in matrix manipulations, let X(I) = P1(I).

11. For economy in writing, define F1(P.L,P2,P3,P4,P5) = residual or unbalance of heat and mass balance for volume 1, and similarly for F2(P), F3(P), F4(P), and F5(P). Since each balance function Fi is a function of the pressures in some or all of the other volumes, the most probable way of finding the new pressures at the end of a time step is to determine the partial derivative $\frac{dFi}{dPj}$ for each Fi and each Pj. If the residuals (R) are found for the new pressure guesses at the new time point, then all the partial derivatives are determined at this new time point, and a matrix solution for the corrections to each pressure can be obtained which should reduce the residuals to a negligible value.

The **Pathfinder Atomic Power Plant** was a nuclear power plant built by Northern States Power Company. It was located just northeast of Sioux Falls, South Dakota, and west of its suburb of Brandon. It was named for the 19th century explorer John C. "Pathfinder" Fremont and was constructed in the mid-1960s in partnership with a group of other investor-owned utilities. The main goal of this facility was to be a 'proof of concept' plant to gain practical experience in operating a nuclear plant. Some of the other participating utilities would also go on to build their own plants. Although the superheater developed by Allis-Chalmers was plagued with technical difficulties and which led to NSP's eventual decision to retire the reactor by 1967 (and convert the plant to run on gas and oil by 1968), the lessons NSP learned from Pathfinder served the company in its operation of the Prairie Island and Monticello nuclear plants. The longest Pathfinder ever ran at its full rated power was 30 minutes, and it was only then the company found the flaws that led to the decision to retire the reactor. After sitting idle for 23 years, the reactor vessel was removed from the plant in 1990 and transported to a low-level radioactive material dump in Washington.