A MASSEY FAMILY'S TALE

REMINISCENCE OF OVER FIFTY YEARS OF ONE FAMILY'S LIFE AT MASSEY

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INTRODUCTION—OUR INITIAL INVOLVEMENT

“Massey” was the venerable highly respected Canadian company founded in 1847 by the blacksmith Daniel Massey in Newcastle Ontario. Similarly to other great Toronto philanthropic family dynasties such as Eatons, Thomsons and later the Mirvishes and Rodgers, which gave their name to theatres, business etc. which remain to this day. Massey contributed Raymond the actor, and Vincent our Governor General. Daniel’s implement shop grew by moving to King Street Toronto, acquiring many farm machinery businesses like the Harris Wagon Works, Verity Plow Brantford and Wallis Tractor of Racine Wisconsin and ultimately the Ferguson Tractor Co. of Coventry U.K. Perkins high speed diesel engines of Peterborough had been another wise purchase by President Duncan.

They prospered for over a century with major ownership changes in the 1960s capital crisis and management change, culminating in major bankruptcy in 1988. This eliminated North American manufacturing and a substantial portion of its sales organization. It had been orchestrated by President Victor Rice, who had changed the world renowned corporation name of Massey –Ferguson to Varity and with it had neglected the company’s products and its prime farm customers. Total selloff followed to the detriment of Massey shareholders and with it the blood that ran deep red in our veins.

Foremost I most emphasis that all that follows is to the best of my current memory and that all errors, omissions, etc. are all mine and spell-check’s and I do sincerely apologize.

EARLY YEARS

I was born to Ida and Mel Gordon, April 12 1935 in Cabri hospital nearest to Sceptre Saskatchewan. Sceptre is a small village on the south side of the South Saskatchewan River which flows east from the Rocky Mountains 2000 miles before ultimately emptying into Hudson Bay. Sceptre sits north of Maple Creek and Swift Current, east of Medicine Hat and west of Moose Jaw. It was reported that I could spot a red Massey tractor at 2 miles distance. Mel Gordon was a grain buyer, operating a local grain elevator and a Massey Harris agency. He later owned a Massey dealership before becoming a block-man, whose sales district won major Massey Canadian sales competition three years running, for most sales. I still have the silver tea service and carved writing desk prizes as a result. These plus an elaborate RCA console push button radio (which I sold for lack of space), all travelled to Africa and New Zealand with us. We moved to Regina in 1940, then to Toronto in 1941-42 during the war, when steel was not available for farm machinery manufacture, when Massey had to import Sunshine combines from

Australia to augment supply. Dad was co-opted for quality inspection of arms production and Bren-gun carriers built in the M-H King St. plant. We returned to Brandon Manitoba as manager under Bill Daly, M-H Winnipeg. Dad started a cinder/concrete block manufacturing business in 1946 but within weeks was persuaded by Herb Bloom, vice president sales, to manage M-H Salisbury Southern Rhodesia area of Africa. Dad flew to Africa, while in April 1947,my mother and I voyaged on the twelve passenger cargo ship African Sun, three weeks non-stop New York to Cape Town, then three days by train to Salisbury. While in Africa Dad worked in close cooperation with R.D.Fulton, M-H manager for South Africa , under Bill Mawhinney, world vice president located in the London head office.

AFRICA

High school at Prince Edward boy's school in Salisbury resulted in my receiving my Cambridge School Certificate and South African Matriculation that qualified me to enter universities worldwide.

Massey was well established throughout Africa. It had recently been involved with the British Colonial Development Company government project in the Tanganyika Groundnut Nut (peanut) Scheme, and the Salisbury branch had been commissioned to dispose of the unsold machinery from the demised scheme. Several incidents come to mind. The first was a field demonstration in about 1948 of an M-H model 50 Self Propelled Clipper Bagger Combine at which Tom Carrol was present. Meeting him was instrumental in my lifetime ambition to contribute to world field harvesting, particularly combines. The second was related to surplus M-H model 744 tractors. These tractors were built in U.K. (hence the"7" prefix, the 5, 6 & 8 being use for Australia, Germany and France respectively) and was derived from the N.A, model 44 tractor but with a Perkins 6 cylinder (P-6) engine. Problems surfaced because of the increased torque which showed in clutch, then transmission and final drives failures over the years. The first row-crop tractors unboxed in Tanganyika were reported by Massey service personnel (Steve Reid a western Canadian working there) to have been driven head on to each other by local untrained native drivers, with a stomach churning result.

This period was a time when central Africa was conscientiously adapting erosion control applications consistent with overseas policies everywhere. When flying over Zimbabwe in the 1970s I felt the only thing saving this land from washing into the Zambezi, was the contour ridging left from these early pioneers dedication. The powerful low- end torque of the M-H 744 diesel engine made excellent units for drawing earth scrapers for earth dam works. Unfortunately the beneficial high torque at very low speed made them vulnerable to suddenly loosing engine speed, stopping, and then beginning to fire the engine backwards and likewise the tractor and loaded scraper. This resulted in rapid abandonment by the driver. To say the least this caused panic and calamity, with undertrained native drivers, as tractors and all rolled off the embankments. Corrective changes were made to prevent diesel engines from having this problem.

While in Rhodesia I spent many happy days and weekends and holidays assembling equipment, plows,(mostly disc plows),tandem discs, also Goble offset discs (these were North

America built with oil bathed gang bearings), etc. for the branch. Massey had bought a local farm equipment manufacturer in Bulawayo who made simple oxen or horse drawn six tine scufflers, plows, budzas (hoe blades), etc. This facility was amalgamated with S.A.F.I.M., the South African Farm Implement Machinery Company of Vereeniging South Africa which Massey owned.

One insignificant item I learned from a Massey mechanic Ernie Wire, when working with him, was to lather up on your hairy arms to bring soap down to dirty hands. Strange that I would remember this and use the technique for the next 60 years

1952 completed my father's term and he was warmly congratulated by R.D.Fulton the South African branch manager. We were to take leave back in Canada. We boarded the cargo/passenger ship Durban Castle at Beira Mozambique, travelled north along the east coast of Africa to Dar es Salaam, Zanzibar, and to Mombasa for New Years Eve in a Kenya game park. Stops were made at Aden, Port Sudan, The Suez Canal, then on to Naples and Genoa and on by train, on tour of Italy, through Switzerland to Paris.

When the ship was passing the most easterly horn of Africa, the captain announced that an interesting fact was that two years earlier the lighthouse keeper and family, on this point of land, had been attacked by cannibals. Today these same Somalis are attacking ships and holding hostages.

Massey was celebrating the production of the ten thousandth M-H Pony tractor built in France when we visited the Lille plant.

Moving on to M-H London office, Dad met with Bill Mawhinney and was reassigned to manage New Zealand and island territories. My father and I visited the Birmingham M-H implement plant and the Kilmarnock Scotland combine plant where the model M-H 26 combine was being built.

NEW ZEALAND

Crossing the Atlantic on the Cunard liner HMS Cythia, a three month holiday in Canada, across it by train, a P&O passenger ship took us from Vancouver to Auckland, then by train and ferry to Christchurch, just in time for me to begin a six month stint in the New Zealand army. This was a compulsory requirement for all NZ resident youth. While in the army the newly crowned Queen Elizabeth (currently in her 60th year of her reign) and Prince Phillip reviewed our camp where the Queen made a close inspection and talked to my platoon members.

University education commenced in February 1954 at Canterbury College of the University of New Zealand in Christchurch where Massey had their office and we lived nearby. After the first year of sciences there, the next three years were spent ten miles south at Lincoln Agricultural College graduating Bachelor of Agricultural Science (major in soils and engineering) from the University of New Zealand. Additionally the college Diploma in Agricultural Engineering and one from The Institute of British Agricultural Engineers, their first Diplomas outside Britain, were earned.

Shirley and I were recently in New Zealand (November 2010) and visited the famous Christchurch cathedral where our family had been members while in New Zealand. The second major earthquake in January 2011 brought it done. The four-plex apartment on Armagh St., which Dad had taken over from Charlie Galbraith, had been recently torn down for development when we visited.

Massey Harris had sold many M-H four equal size wheel model GP tractors, very suitable for N.Z with much rolling hill country. Cletrac crawler tractors had been widely sold through M-H dealers in the past.

While in New Zealand I continued helping assembly machinery for the M-H branch on weekends and holidays and worked night shifts on Birds-Eye 'frozen" pea harvesters. The Lincoln degree required 4-5 month farm experience employment each summer before graduation. Mine included work on a 10,000 sheep farm (two men, four dogs), a small seed producer (grass & clover seed harvest), a north island 180 cow dairy farm (3 man operation including breed bulls and young stock all on 200 acres with no brought-in feed). The fourth experience was at P.D. Duncan Foundry and Implement Manufacturing, a local M-H supplier of plows, drills (they produced a heavy coulter drill to seed grass and clover into highland tussock pasture) and implements in Christchurch. While working for Harry McKellar I ran the sheep operation for two weeks while he stayed in town with pregnant wife and two girls. Upon return I asked him if it was another girl, and he replied "Another lawn mower". When asked to explain, he said "It would be a damn poor son-in-law who didn't cut his father-in-laws grass". I used her spinning wheel in my spare time to spin enough of their white/black wool for my mother to knit a zip-front sweater jacket that I wear, as a garden coat, to this day.

We owned a cottage and at the Rakaia River, south of Christchurch, where salmon, herring, trout and scoop netting carwey were at a premium. Easter holidays were spent in the inland mountain highlands shooting mule deer for their ear bounty and tails, which we sold to the local Chinese.

Our time in New Zealand had many interesting ramifications. I was able to experience working on a steam engine driven threshing machine gang. I spent a few weeks on a H.V.Mckay "KT" self propelled stripper combine, hand sewing wheat grain bags off its bagger seed cleaner. Let me tell you, when grain is really flowing, the last thing you want to see is the weed seed bag overflowing and needing changing. Your tongue hangs out and keeping up is near impossible for one man. There was no idle time.

M –H business took my father to Australia, where fellow Canadian Art Moffit and later Bob Drennen (his brother, Bill, was with Massey in Africa) had served as managers, and to his island territories of New Guinea, the Solomon and Marshal Islands, New Caledonia, and Fiji and associated islands. All these islands had both Massey and Ferguson distributors who later amalgamated, in the late fifties, under Massey-Ferguson. My father retired in 1960 to return to Canada for our August wedding. Pensioned with over thirty years dedicated service his monthly pension of $278.00 continued to death in 1987.My mother continued, with half this, until her death in 1991. Today the populous is complaining about the sustainability of "defined-benefit" pensions.

Dad as president of the local American/Canadian club entertained many of the military officers and personnel involved in the 1952 International Geophysical Year. They were supplying McMurdo Sound on the Ross Island ice self in Antarctica through Christchurch. Something I was interested in was to learn that after parachuting a running Cat. D-9 from a Globemaster aircraft to make runways at McMurdo Sound, it was returned to New Zealand for maintenance within a year with over 8000 engine hours, having never been shut off in fear of failure to start at this cold temperature.

Another interesting achievement was when Fouck's British Trans-Antarctic Expedition using special track snow machines on route from Shackleton to the South Pole, needed supply caches on the continuing journey to New Zealand's Scott Station in McMurdo Sound, Sir Edmund Hillary was asked to facilitate. Lacking funds he partitioned M-F to provide Ferguson tractors with Roadless rubber halftracks which he fitted with crude plywood/Plexiglas cabs to pull loaded sleds. It was reported to have completed the task and reached the pole before the British.

Tom Stobbard a photographer on Hillary's Everest expedition was doing photographic work for M-H and was visiting our home where he gave me a light weight beige cardigan that had been with him on Everest. I truly cherished that sweater and wore it proudly for many years.

While in New Zealand President James Duncan and his wife visited us on Company inspection tour. New Zealand was especially devoid of activities on weekends except sports in this era, so it was decided to take the Duncans to the horse races. This suited Mrs. Duncan with her Spanish heritage but not so Mr. Duncan who showing no enthusiasm said that he had spent a lifetime replacing **horses** with tractors and was not about to support them now.

MASSEY- FERGUSON IN N.Z.

Massey had purchased the Ferguson Company. It was reported that it all began between Harry Ferguson and Jimmy Duncan over dinner when Duncan remarked that there was too many farm machinery companies. Harry, suffering from difficulties with Ford, agreed and later amalgamation negotiations resulted in a near agreement differing by $1 million. It was settled by a silver coin flip proposed by Ferguson, which he lost and the coin was displayed at M-F Corporate H.Q. in the Sun Life building on University Avenue for many years

It must be remembered that Harry Ferguson had a very different slant on farm machinery sales. Whereas traditionally machinery was "floor planned" at the retail level, then sold by agents reporting to distributors who reported to Company branches established strategically. Ferguson engineered the product and trained personnel in his unique system. His original machine shop is honored by a wall plaque on the original location, on the street facing the right side of the Belfast city hall. He had no manufacturing facility but had the tractor built by Standard Motors in Coventry and later by Ford in Detroit then at the Southfield Road plant. The result was that when Massey amalgamated, these large financially profitable well organized distributors and their agents were major contributors to the new Massey-Ferguson.

The amalgamation of Massey went smoothly in New Zealand where Ferguson had the single distributor, C.B.Norwood Ltd., who had dealers and agents throughout New Zealand. They eventually took over all Massey franchises by 1958 and my father continued until 1960 as Massey's local representative with C.B.Norwood and other distributers in the south pacific.

AUSTRALIA

My time in New Zealand was at end before Christmas 1957, so I decided to travel back to North America with a Fulbright Scholarship doctorate student at Lincoln. Herman Schoderquist, from a family sheep ranch near Cimarron Colorado had been studying sheep husbandry at Lincoln. We first flew to Sydney and later were taken to a sheep research station, by C.I.S.R.A., inland west over the Snowy mountains to Orange. Herman having gained much knowledge in our few days stay agreed that we should hitch-hike to Adelaide despite his pronounced limp from early life polio. This turned out to be a wonderful two week adventure down the Murray and Murrumbridgee Rivers outback, sleeping under the stars, cooking and eating what we could along the road. Often we walked all day getting only one ride with some lady taking her children to school 5-10 miles down the dusty road. If lucky we might see another vehicle that day and go another 50 miles further that afternoon. We road one day hanging on the outside running boards of an old coupe that was full loaded with gear but the three fruit pickers from Queensland felt they could not leave us. They had banana bunches tied over each front fender and because the road was badly corrugated, caused by road-train trucks, they chose to drive in the bar- pit beside the road where the earth scrapper had taken the soil to build the road. This remained smooth, but culverts meant the driver would sweep back up on to the road and off at break-neck speed while we hung on for dear life This was not the worst for they insisted on feeding us cookies while performing these maneuvers. They were on their way to Tasmania to pick apples.

We were convinced by a local Agriculture Rep. to travel with him for a four day side trip to stay with him at his home in Swan Lake. He kept stopping along the way to do a little fishing. Back on the trail again through Mildura we tried to buy a milkshake in Ballarrat, much to the chagrin of the locals, who had never heard of it. We walked out of town late afternoon, no cars, except a road gang up the road. Sure enough they came over inviting us to camp with them. Locally procured rabbit stew was on the menu, so we contributed a can of pork and beans and savored the tantalizing aroma by two weary travelers. But it was not to be for we ran to flag done a lone car, the first since noon, leaving that wonderful stew untested.

Completing our visit to Adelaide we continued to Melbourne where we visited the H.V.McKay plant in Sunshine, touring the facilities including the log cabin preserved on the grounds where the McKay family originated.

ENGLAND

We left Australia travelling by ship to Indonesia, stopping at Jakarta where military upheaval was in progress, then on to Bombay, through the Red Sea and Suez Canal, on to Italy and England. I met my parents there for a few days before they continued on for their leave in Canada.

While in the U.K. I took the three month overseas machinery training course at the Massey service training school near Stoneleigh Abbey outside Coventry. I lived in Leamington Spa near Warrick and Stratford on Avon. This past Ferguson facility was situated on an old W.W.2 base in mostly Quonset huts. Training was primarily in the use of “The Ferguson System”, its function of draft and position control and its complex transmission oil piston pump etc. and the servicing and performance of all aspects including field operation. Additionally the M-F 701 baler and M-F 26 combine etc. were covered.

Comradeship was encouraged, with meals and libations celebrated at nearby Stoneleigh Abbey through some M-F arrangement. Many happy hours were spent in the Abbey pub and a local “The Red Lion” Covington, with instructors who were mostly past Ferguson employees. We became friendly and, as they had worked with Ferguson engineers, we went to visit the Harry Ferguson new engineering facility at which they were developing a all-wheel drive/steer, individual brake vehicle, the prototype of which we drove. Harry Ferguson after the amalgamation had been given the mostly ceremonial position of M-F President, subordinate to James Duncan who retained his chairmanship, which lead Ferguson to continue in Coventry on other new engineering adventures.

Having completed the M-F course, I continued on a three weeks of diesel engine training at M-H Perkins engine production facility in Peterborough near Lincoln, followed by two weeks at C.A.V./Lucas on their rotary fuel injection pump at their training centre in Brighton. The injection pump was being use on the Perkins engines in M-F tractors. Perkins engines had long been in popular use in Massey equipment and the high speed engine manufacturer of high speed diesel engines, used in London taxis, was a natural fit.

COLLEGE IN CANADA

Not needing to be back to Canada for university until September 1958 I spent the next four months working as assistant to various M-F service representatives out of Stratford, Bristol and Manchester. This was primarily on baler problems, particularly those relating to knotters. The M-F 701 baler with “horse neck” plunger is well remembered for the violent rocking of the tractor when the unit had to stop, to stop hay pickup, during the knotting process. The unit had a heavy flywheel, but never seemed to have enough inertia to prevent violent feed-back to the tractor.

Continuing Agricultural Engineering at Guelph College on an A.S.A.E bursary, two years were spent (having been granted two years for courses as a result of my earlier four year degree) receiving in 1960 a Bachelor of Science in Agriculture. While there I received an M-F scholarship presented by M-F President Albert Thornborough for overall engineering proficiency (a fellow student, Jim Barlow, received the scholarship for farm machinery knowledge from Professor Webb, much to my disappointment).The practical application of the Ferguson system at the college left me totally disgusted. Professor Glen Downing head of the engineering department was a family friend from Sceptre Sask.

The summer of 1959 found me working at the Guelph Engineering Department for Professor Pos developing tests and literature review for agricultural material flow by auger conveyor, free-flow, etc., to formulate methodology and publish a booklet on the subject.

I was back to Massey for the 1960, summer working at the Test Track and that's where my education really started. Stu Allen at the track with Garth, Carmen, John Lee, Clark, Karl, etc (more to follow on their exploits) familiarized us, after a few weeks, sufficient for three months "field testing" at Boswell's Corcoran Tulare Lake establishment in the San Joaquin Valley of California. Two likewise inflicted people there were Graeme Leonard and Tony Scott-Fisher. A good time was had by all as we were installed at the Ranchero in Fresno.

Boswell, a conglomerate, primarily involved in food retailer, had farms in Tulare/Hanford area of California and the future Sun City area north of Phoenix on which Massey tested. The California agricultural operation was headquartered in Corcoran with offices and grain elevators storage and shipping facilities and with a full complement of plant breeders, horticulturists, agronomists, engineers, etc. Tulare Lake is a below sea level lake bed, in the lower San Joaquin Valley draining the Sacramento River from its Oregon headwaters, which is farmed by Boswells when evaporated dry intermittently. Driving through you can see where thieves have reached from boats during flooding to cut off and steal the copper wire. These periodic floods would be evaporated by the intense heat and eliminate the huge lake. The land, roads, offices and service buildings continued as before. Workshops, storage buildings, even a cafeteria are spread over the many thousand acre lakebed.

Boswells used a two unit fleet of six to eight combines each and we were attached to one of these with John Deere test group working with the other. The M-F 92 super with new Perkins diesel engine and 18 ft. header was being tested in wheat, barley and safflower. .Additionally we had a TX prototype (future 400/500series) combine. These had the "smooth", box design dictated by Herman Klemm to confirm to eight foot road width and thirteen foot trucking height to accommodate Custom Cutters. The Perkins P6 diesel engine was mounted fore-aft to the right of the operator in front of the saddle grain tanks, directly above the cylinder. Power was transmitted by a tractor-like gearbox to a right-angle enclosed oil bath drive to left and right. The left drive engaged the tank unloader system (cross auger, vertical and horizontal augers) by an enclosed clutch then though v-belt drives. The right side drove the combine mechanism through a multi-ribbed wide v-belt to rear beater through another clutch and had variable speed pulleys to a two speed oil bath gearbox cylinder drive. Traction drive was by variable pulleys and belt to the front axle mounted transmission. The general mechanism was driven off the right side of the rear beater. Elevator/header drive was by double chain from the left of the beater, engaged by electric clutch. Conventional straw walkers and shaker shoe design was used with crank speed adjustable cleaning fan. Significant variation from convention was the absents of front beater and the rethresher (a series of groups of six steel tipped one inch wide belt rubber, six inch long paddles, rotating against a concave configured access door) as saddle tanks restricted convenient return access to the cylinder. Operators platform and controls were much as ended up on the 410/510 combine except the engine compartment had a forward facing hump like a snout to accommodate the engine

Problems with this design centered on engine cooling which blew hot air on the operator, failures in the drive train behind the engine, most frequently in the unloader clutch. We were operating 24 hours and it seemed that each morning the drive had to be dismantled under Karl Langhorst's direction to repair the clutch, a time consuming job.

August culminated with my return to marry Shirley on August 27th 1960, which has survived 52 years (sometimes with bumps as most years I was 'in the field about twenty two weeks each year). We managed however to raise two sons Michael and Mark who with spouses Karen and Vivien have enriched our life with grandchildren Robbie, Sean and Dana.

Education continued, supported financially by Shirley's teaching, at the University of Toronto for the1961 term, I graduated with a Bachelor of Applied Science in Mechanical Engineering Application. I become an Ontario Professional Engineer, after seven years of university, which had been my ambition since meeting Tom Carrol in Rhodesia in the 1940s. Ready for real work, I went to M-F's King St. office and told office manager Bill Miller that I was ready to start. He looked at me as if I'd crawled out from under a log. Some discussion followed and I started officially full time in that spring with my Massey destiny, May 1961.

ENGINEERING BEGINS

Beginning my remembrances of my thirty years working at Massey Ferguson, I feel that I must emphasis that these are words based on my memories alone through the past fifty years, being now 76 years of age and having been retired, with no real involvement with farm machinery at all, for the past 23 years. These thoughts are my responsibility mine without the influence of others, nor detailed reference or verification from the literature. Mistakes and errors are mine alone.

THE MASSEY FARM AND TEST TRACK

Massey, in the late 40s, accumulated four or five farms amounting to one thousand acres between Steeles Ave., Fourteenth Ave., Warden and the railway line through Milliken, in Markham Township, north of Toronto. Mrs. Duncan also owned farms on the north side of Fourteenth Ave. This was to be the M-H **"experimental /demonstration farm". Indeed it did so as a Holstein diary herd was established in existing farm buildings on the south west corner and a registered Shorthorn cattle herd further north. The farm homes, midway along Warden on the west side (the Clark Young farm) were used by the Duncans and others as a rural retreat. Remaining farm houses were rented out. Farm operation, including cropping, was managed by Bill Southerland (and Sam Gough in the 70s) who later went to m**anage E.P.Taylor's Belleville stud farm. The animal husbandry ended with Massey Corporate changed in the 70s and the dairy barn became home to Logging Research where M-F attempted to design a log treever (four equal wheeled articulated tractors with A-frame and winch to draw logs out of the forest). It was headed by an engineer from the major competition {Can-Car in Northern Ontario). Some design and testing of it and other industrial equipment occurred at the test track.

The farm was sold as a unit for development in the 70s to a conglomerate owned by Stan Libbel and Bratty, which developed housing on the southern third and office/industrial on the north. The Test Track was rented back but became surrounded by office/warehouses/factories of I.B.M., Ford, Apple, Johnson&Johnson, Tupperware, and financial clearing houses of the banks (C.I.B.C., Scotia and American Express).

The Test Track, entered by a long lane, was purposely isolated in existing bush. For security, the lane had an automatic gate barrier controlled from the office on the sole access road. The gate, at the 14th Ave. railway crossing access, was padlocked preventing entry during non- working hours. The T.T. occupied twenty odd acres on the north east corner of this acreage along the railway line (except for an existing school houses along 14th, which became an upscale restaurant in the 70s).

THE TEST TRACK FACILITIES

Purposely built in the bush in the isolated north- east corner of the farm, unseen from the roads, it was housed in steel clad buildings erected by McClintock Constriction. Little functional field testing was done locally because of the short harvest season and variable weather. The main 30ftx120ft building along the railway line contained the threshing lab in the north connected to the south half workshop, with lean-to office/lunchroom/locker-room, on the s-w corner added later. The “Dust Tunnel”, left over from the original T.T. configuration, remained as a drive-through Quonset hut workshop to the west. There was ample paved parking for staff on the south, and equipment parking pads in the trees to the west. Later a loading dock was constructed to the north of main building, including a high capacity overhead swing crane of Garth Henry’s design/construction. Within the main building between the lab and the workshop, a perfectly level (within 1/16th at any point) 20x20ftpad was installed in the 60s, used to premeasured units operating on the track, to later determine any distortion etc. Twenty by fifteen foot rollup overhead doors provided easy access throughout to all facilities. Full 550 volt three phase power enabled high power test rigs. Full workshop facilities included drilling and boring machines, lathes, shearing and metal presses and welding (including electric, Tig and acetylene). A prototype ‘graveyard’ etc. was located in a pole barn to the west of the hill/inclined turning pad at the N-W corner of the test track.

A reject forklift deemed obsolete from the engineering shop, with small smooth hard rubber wheels which was used restricted to shop and paved areas. An M-F model 2500 forklift made the trips to the muddy graveyard and was used for outside work. A dug well, south of the shop, provided water and sewer was by septic tank. Buildings were crudely insulated but not the overhead doors which leaked blown snow, and needed to be opened frequently. Heating was by surplus oil fired furnaces with crude ducting. Temperature was kept cool as men, who wore insulated boots and clothing and were in and outdoors constantly, and didn’t like to be overheated. The office and lunch room were ‘shirt sleeve’ with auxiliary electric radiators and window air conditioning. Overhead doors were open for good summer ventilation. Heat was shut off when no one was working and started in the morning, mainly by Stu or Carman who seemed to take turns for who could arrive first to turn on the heat and start the coffee urn.

TEST TRACK LAYOUT

The test track itself, as drawings and photos show, was laid out in traditional strips within the existing deciduous forest, on the S.W. corner of our section. Similar test tracks were established in Tecumseh Michigan and in France, north of Paris (managed by George Gay), U.K and Germany. It consisted of four 20x200ft parallel east-west strips, separated by trees, with 60ft diameter paved turning pads at each end. Theses were interconnected to a 15 degree hill climb to a 30 degree, 40ft diameter inclined turning pad on the N-W corner of the main strips. Each test strip had gravel 10ft wide “roads” on each side for instrumentation van to record during testing. The tractor could run on this “road” when towing equipment, thus saving wear and tear on our old tractors. The basic two test surfaces were almost identical to those traditionally used around the world (i.e. N.I.A.E. in England, and as seen in Russia and currently in a commercial testing facility that was seen on TV testing a new design Kenworth truck road tractor).

The south- most concrete strip was “the obstacles”, using half round 14” wide by 6” high steel half pipes, bolted securely across the full strip in three sections, each immediately following the next. First, parallel half round pipes ran full across, but spaced at increasing spacing, the first about two feet apart (to allow large tires to fully bottom between pipes),increasing to about 6 feet spacing. Next, the half pipes were staggered at mid strip (such that vehicle’s left wheel climbed and dropped, then the right, then the left , then the left rear, right rear, and so on) to cause racking of the frame. The offset pipes spacing increased progressively to accommodate different wheel-base vehicles, thus providing testing for a wide range of vehicle design variance. The third section used identical pipes fanned across the strip at increasing angle and increasing spacing.

The next strip to the north was “the pavé”, a random laid cobblestone full length surface, set in eight feet of concrete foundation. It was constructed thus in fear of any possible surface change with Canadian winter freeze-thaw, which fortunately never changed in the forty years, except for a few loose cobblestones. Granite cobblestones were reused from the Toronto Transit Authority, when streets were torn up to remove or relay streetcar tracks. Great difficult was had trying to have local professionals randomly lay the stones, not in lines with a smooth surface. Some many years later a vehicle stress gauge investigation of M-F test tracks was conducted, which surprising to expectations, showed no favoritism to any design from the Milliken track, however the Detroit track showed some repetition from the cobblestone being laid in a repeating pattern.

The remaining two strips and turning pads were for high speed and load-car testing. The north-most strip had rails imbedded to mount a 4ft base by 1ft high simulated rice levee which ran half across the strip to lift the right wheels during one pass, then the left on the next pass, as the vehicle reversed direction during the next round.

The ‘dust tunnel”, located directly east of the obstacle turning pad, was originally conceived as a drive-through dust atmosphere (an actual combine harvesting reality).It was never used. Beside, to the south, was a 20’x20’ ramp-in and ramp-out, 5ft deep water bath. Photos of tractors and combines in this “bath” are available in the literature, However it had

been filled and paved over before my time. We used the Quonset as a drive though workshop, eventually fitting a full length gantry crane for engine replacement etc.

To the south, of the turning pad between the dust tunnel and the obstacles, we had mounted two large grain hopper tanks with elevator system for grain storage and unloader tests. Grain tank capacity and unloading system tests were made using a portable hopper (carried on the forklift, and had a slide emptying gate) and weighed on the platform scale. The scales were added for this and to weigh our loaded road trucks. Further it enabled us to calculate a machine's centre of gravity, by weighing it at different angles.

Understanding the track testing better can be gained by first realizing that it was used for comparison, physical, mechanical functional testing, operator evaluation and general function. All manner of equipment was evaluated, both Massey and competition, tractors, combines, balers, swathers, all manner of implements, twelve furrow plow to manure spreaders. Some of the guys insisted in driving their cohorts' cars and trucks on the track for a bit of sport!

TEST TRACK PROCEDURE

Perhaps a good example would be a representative combine procedure. Combines generally were operated with mechanism engaged and unloader spout being moved regularly. Cycling of header and reel and other systems and hydraulics might be included. The cycle begins east to west on the obstacle at maybe 1mph, first gear (the speed by stop watch timed over 88ft and marked for each speed on the simple speed indicator),then up to second gear and maybe 2mph west to east down the pavé . This would be followed by a full R.H. brake turn on the turning pad, gear up to third and full speed east to west on the third flat concrete strip and turn right to the base of the hill. Change to first gear, up the hill, with a full brake-held stop on the way up, over the 25' top to the inclined pad. A 360 degree turn to the right on the inclined turning pad, back down the hill with a full stop and brake hold midway down, ending at the bottom of the hill. Change to third gear, full speed to the west end of the obstacles, gear down to first at 1mph. Completing the obstacle pass, you gear up to second over the pave, east to west, with the 360 brake turn, L.H. this time, up gear and full speed to the base of the hill. The same procedure was followed on the hill and pad, except this time a L.H. 360 turn on the inclined pad. Then full speed to the east start of the obstacles and repeat. The turns on the inclined pad were to load axle and frame equally left and right.

There were infinite variations in this procedure. Combines mostly ran with full grain tanks (grain from the threshing lab), manure spreaders weighted with wheel weighs in the bed, tractors with or without mounted equipment, even using the load car on occasion. Combines could be mounted with various grain headers or corn heads etc. etc. Variations included using various functions such as hydraulics, hydrostatic transmissions, electrics, gear shifting, braking, component engagement, etc., at various intervals and repetitions. The length of test varied from a few hours (25 hours for a general shakedown or manufacturing quality control per shipment confirmation, to a full 100 hour test program). Should the header, reel or accessory, etc. be under test, an old combine would be used. 24/7 operation was called for on occasion and in

winter snow and ice removal seldom restricted testing. Sweeping was required to keep the pavé effective.

Detailed reporting by drivers and others was written as the day progressed and submitted daily to the responsible downtown personnel. These reports hung on the notice board-counter and were added to as “things” happened during the day, with time, conditions and details by each individual. Finally each issued test request would have a detailed report compiled by the test department at its conclusion.

OTHER TESTING

Tractors generally ran the full course, swathers not the obstacles, and most others just the pavé. Implements could be pulled offset on the pavé with the towing tractor running on the gravel road beside it. Using the old M-F #1100 tractors repeatedly never seemed to have failures. They proved to be rugged.

What has always surprised me was the consistency of mechanical and physical results of repeat failures, which seldom varied more than 5%, despite so many variables (full range of driver experience and ability, a less than accurate repeat speed runs, variations to the line the operators select along the pavé and the obstacles, weather conditions etc.).

Normal procedure was 15 minutes on, and then 15 minutes off for drivers, but this entirely optional. Without a cab, exposure in the harsh Canadian weather made more frequent change, but seldom prevented continuance. The worst situation was ice storms that smoothed the pavé surface (negating a comparative test, the essence of the test track, and making high speed passes and hill climbs treacherous). The new employees and temporaries took the majority of the driving to enable the more experienced mechanics to ply their trades. However everybody took their turn. Work days were normally 8am to 4.30pm weekdays with half hour lunch break and 15 minute ritual morning coffee break. When necessary 12 hour shifts were accommodated, weekends, holidays and nights were common. Often two-man shifts were worked at night. I was astonished that we never heard of back problems from any of these men despite many having worked there for over thirty years. Nobody ever used special back restraints that I know of. The seating was mostly without springing, just a simple yellow cushion as provided with the machine. Most stood up for the obstacles and sometimes for the pavé. Later as we went to better seat cushions (always made by Victor Spring here in Toronto, with the 410/510, and superior ergonomic design, by Sears and Bostrom, spring dampened ones for 760 cabs). Operators eventually learned to sit, using the fully adjustable pivoting power steering pedestal.

Rice combines, with their narrow rear axle passed over the rice levee obstacle. Hillside combines concentrated hill and inclined pad.

Load car work began using an engine exhaust restricted tractor (a M-H #55, then a M-F #1100tractor and when it become necessary to couple two tractors in series, we constructed a tractor unit driving a large squirrel-cage fan with exhaust throttled to vary the load). These units were pulled in a circle around the two north flat concrete sections. The noise produced under

high load from the fan restriction resulted in neighbor complaints, particularly at night, after area housing was built. Load was measured using a traction dynamometer (Roadless “Dyna-Load” I believe, originating at N.I.A.E. Selsoe). It was mounted in the hitch between test vehicle and load car. It had the appearance of a hydraulic cylinder whose oil filled barrel registered load when pulled in tension. Load was read on a large diameter dial gauge beside the driver, connected by hose from the load cell. The unit, somewhat fragile, was removed after the desired load was achieved by throttling the exhaust or fan outlet/inlet. We also used a Dillon spring type scale dynamometer to measure load, also shown on a large dial.

All manner of testing was done at “The Track” from dust box tests of bearings, alternators, fans, etc. to cycle testing and development of individual mechanical functions in “in-house” fabricated fixtures. Hydraulic components and systems, electrical components, and belts and chain drive arrangements were evaluated, in operating functional fixtures and in situ on the whole machine. Many of these tests ran 24/7 with appropriate safeties and record keeping. Often someone was delegated to come in on the weekend or holidays to check. Many evaluations required ingenuity to fully evaluate some design, and there was no shortage of that on the part of test track personnel.

We were experiencing water/mud/sand ingress to final drives on combine rice tracks. These are expected to operate in two foot deep water in rice fields. Water and grit would enter past the 12” diameter rubber lip seals on the drive hub causing a constant flow of muddy water. A rig was conceived that sank an old rice track combine in an 8’x12’, 24”deep pit in the field near the buildings. The combine operated with the tracks in the pit on two 1” thick 8’x4’ steel plates submerged in the pit. The steel plates wore through in about a week. The combine was chained to a nearby maple tree and allowed to run 24/7. Wouldn’t you know it! One morning the guys arrived to find the combine out of the pit stopped against another maple tree, the chain having broken. Better seals were developed in conjunction with our seal supplier Chicago Rawhide. The single oil seal was replaced with two seals, an oil seal inside with another triple lip dirt seal outside this. The combination, specially designed and tested for this application, was successfully evaluated and went into production.

Development and quality testing as well, was evaluated for manufacturers products Massey envisaged for possible sale. A full range of competitive chain saws were evaluated when M-F was deciding which brand to market. Vicon-Lely side delivery finger wheel rakes were track tested prior to marketing by M-F. We tested snowmobiles, manure spreaders, front end loaders and mowers for small tractors, snow blades, garden and horticultural small size Asian sourced tractors, balers, Vicon hay rakes, forage harvesters (even the Badger designed one), corn harvesters, grain pickups, corn heads corn choppers, straw choppers and anything M-F might want to sell or compete with. A wide range of competitive combines were evaluated at the test track, John Deere, I.H.C., Oliver, Case, White, Allis Chalmers Gleaners, Fahr, Claus, Clausen, to my memory, on the track and in the threshing lab.

Swathers were always a lot of fun. Their front drive wheels plus caster rear wheel make them swift, tight turning but intermittently unstable. You remember your scratched nose and knees from falling off your tricycle as a kid, the unstable original 3 wheeled A.T.V.s of the 70s, your three wheel mobility chair you now use to get around the shopping plaza. These are all modified now to four wheel stability thanks to “Big Brother” Government who sure take the fun out of life, not to mention customer demand. Our resident expert on swathers at the track and in

the field was Vern Macklin. It is impossible to know how many times they tipped them over on the track, particularly when operating without a header (table).It was favourate track entertainment to have someone new and unfamiliar to “just take it for a round at speed”. They came back to the office looking sheepish to get Vern to go and retrieve it, much to the accompanying ribbing. We evaluated many Versatile, Macdon, etc. swathers as well as assisting in the development of both the M-F #43 and #44 Models both gas and diesel built by Massey on King St.

TEST TRACK HOME

Rita and Stu Allen were particularly caring about the spouses and families, while me were “in the field”. Stu was a mentor to all, as well as being a caring effective manager. They found boarding locally at Hagersman Corners, or with their many friends and associates in the Markham region. Many of these relationships last for years, with life long friendships.

Many of the personnel at the test track had worked there from when it was initially built until field test operation moved to Hagersville in the mid 80s. I persuaded many of these long dedicated employees, who had sufficient funds, to take retirement rather than the chance in Brantford.

We had no end of requests from all sources to work at the test track as the wages were good and travel was enticing. One summer we were approached by Ontario Agricultural College to take on two students from Ghana. Canada was paying for their education in Canada. My experience told me to stay well away from this, but “the powers that be” knew better. I dug in and they came to us at no wages. Hind sight showed they should have paid us. Canada/Guelph agreed to pay all their costs. Of course they had to live downtown in the “big city”, so with no vehicles, we arranged for Vern Macklin to pick them up at the subway on his way from home on Yonge St. south of 401.This worked for two days, and then they came by taxi, after 10am. One never came the second week and the other off and on mid-day for another week and we heard no more. They had told us that after their graduation form agriculture they planned to study Bio-Medical engineering and stay in Canada. You can well appreciate our disgust. We had been used to local farm boys not anything like this.

MASSEY MILLIKEN TEST FACILITIES EMPLOYEES

What follows is listed some of the test employees in order of approximate length of service according to my memories.

Full Time

Stu Allan (T.T. Manager)	Carmen Cariglia (T.T. technician)	Geoffery Cooper (Threshing Lab Manager)

Ernie Smith	Karl Langhorst	Gus Norton
Garth Henry	Vern Macklin	Keith Barton
Clark Major	Chris Hainning	Lloyd Johnson
John Lee	Vern Macklin	Mike Kroll
Bob Cunningham	Ray Hillock (M-F S. America HQ Florida)	George Thrasher (later FT office manager)
Chris Haining	Garnet Reid	John Kiss
Tony Scott-Fisher	Dave Link	Dave Nicolle (M-F Brantford then Toyota)
Desi Chambers	Fred Strauman (to King ST. Lab)	Bob Little
Don McLaren	Dave Hillock (to Honda)	Sammy Arbuckle
Dave Armstrong (Racine Hydraulics – retired)	Phil Vandenberg (to service eng. Manager Kubota)	John Ness (Returned to South Africa)
Bruce Armstrong	Bob Robinson	Sam Cariglia
John Vanec (Auto Eng)	Charlie Cummings	Joe Batiuk (Harvest expert New Holland)
Mike Snowden	John Jefferies	Karl Middlecoop (janitor)
Art Finnigan	Pete Moore	Paul Reesor (Markham Dairy Farmer)
Kerry English (to service training)	Hughie Thorburn	Ron McNeil (to White)
Peter Guest	Derrick Fisher	Arnot Neals
Bill Barton	Norm Porter	Cecil White (to White)
Brock Townsend	Gord Stoneman	Bob Leininger
Murray Mills (to White)	Mike Snowden	Norm Porter

PART TIME HELP

Jimmy Sheldon (Harry Ferguson Grandson)	Russell Batiuk (Wadena Sask. Dealer)	Bill Sowa (Wadena Sask. Dealer)
Warren Skippon	Bob Milne	Local Farmers (Wolfs, Armstrongs, Deacons and others)

AS JUNIOR ENGINEERS

Graeme Leonard	Vern Brown (to M-F Dealer Yorkton Sask.)	Merv Klein
Dale Sumsion (to Timberjack)	Brian Gill (to auto parts)	Tom Kerr
Jim Alexander (Pres. Auto parts)	Earl Morton	Norm Gill
Dave Maw	Terry Robison	Dave Rumble
Mike Sykes	Raymond Chhitta	Keith Faber (to Tetra Pack)
Leeroy Gordon	Ed Martin	Bill Miller jr.

STAFF ENGINEERS **(who spent significant time at the track)**

Bob Dougherty (TTC Engineer)	Alex Crawford (Baler expert)	Dave Rumble
Walter Scott	Geof Cooper	Keith Byrnes (built disable vehicle with Jim Butler)
Lou Coleman	Bert Luke	George Brzustowski
Greg Holland	Joe Girodat	Ed Happy
Tony Fox	Lou Coleman (early 60s)	Len Krause (in 50s) Joe Coleman

DRAFTING OFFICE STAFF WHO WORKED AT TRACK OR IN FIELD

George Von Gavel	Dave Caldwell	Renne Marsh
Lou Nagy	Dick Gerricks	

ENGINERING SHOP PERSONNEL WHO WORKED IN THE FIELD

Gord Hodgins	Ralph Bell	Rollie Gagnon
Ralph Kaulvitis	George Coombs	Mike Taylor

VISITORS

Joe Fisher, Bob Hadley and Paul Migchels- Company photographers
Bob Urech & Ron Bredfield- Bendix & Cessna Hydraulics Representatives
Tom Fox – MacDon Chief engineer

Most of the above worked for a year or more. Many, many more were employed for short times off and on. To those I've missed blame it on my aging poor memory.

A great amount of publicity, advertising and service information photography was done at the test track and farm where equipment was available or brought in specially. Labour and scenic backgrounds were readily available locally. Also field test personnel readily sat-in as realistic farm customer operator impersonators.

Two of the most renowned supplier representatives were Bob Urech of Bendix Hydraulics Division and Ron Bredfield of Cessna Hydraulics out of Wichita Kansas.

There was a constant flow of visitors to the track, making equipment modifications etc. These included M-F engineers, factory production personnel, quality control, supplier's reps and their engineers (i.e. Tom Fox of MacDon), service training (classes often held here) and all manner of V.I.P. visitors.

THE THRESHING LAB

The"threshing lab" was set up early in the test track life as the indoor comparative loss testing facility. Comparative, as all tests were, ran against the M-F 90 combine (as field loss tests were) as a base combine standard. Later the M-F 510 (until the M-F 760) was established as a baseline. Loss tests were named so, as our customers view grain not in the gain tank as lost revenue wasted back onto the field. It is agreed that grain left standing, lost from the header or out of the auger was also wasted. It could be measured and included if desired. Losses from the straw walkers and shaker shoe however were the ones the combine mechanism design could improve. Thus shaker shoe and straw walker loss was collected separately or together to give total loss. As this varied with throughput the total grain input (grain in the tank plus lost grain) was caught and weighed. An algorithm will show that percentage grain loss traditionally increases exponentially with throughput. Thus customers want to compare capacity at a "reasonable loss". Field and lab testing was set up to gauge this. The first formal application of this was done in the 40s at the N.I.A.E> facilities at Silsoe in England.

Our facility was set up in the north half of the main building by Karol Godlewski with Geoffery Cooper as leader. Keith Barton, because of his reluctance to travel, worked mostly there, as did Gus Norton also, because of his steadfast work ethic.

Grain (mostly wheat, but also barley, oats and specialized crops and variations), was planted then harvested on M-F and local (and even from Phoenix and Western Canada).It was cut and bound into sheaves by Milliken personnel using our binders, stooked, to dry thoroughly . Once dry, it was loaded and hauled by track personnel on our wagons and stored in our barn or other local barns. This crop was used throughout the year and into the next. Testing was concentrated in the winter when field testing slowed and track personnel were more available. Each specific crop (each crop from a specific field, where and what growing conditions, etc. has its own characteristics) would have to be run through the M-F 90 to establish its baseline. The object here and in the field was to take representative samples while the combine operated normally at a steady state condition.

Sheaves were thrown out of the storage mow, pushed by pitch fork to the conveyors and laid very carefully and evenly on two parallel 100 foot long canvas, four foot wide conveyors, four feet apart, feeding both sides of the header auger center. This best approximated precise field operation. Crop was laid to be fed feed head first, as in the field. The density (feed rate) was obtained by depth of crop on the conveyor and speed of conveyor feed. The header was mounted on a combine run conventionally or with modifications. The feeding began, and once operation had reached an equilibrium condition a timed catch of grain tank grain, separate straw walkers, shaker shoe and return samples were caught. A trick used to quickly reach equilibrium between runs was to start at low feed rate and increasing the rate at each subsequent catches shutting the combine off with the key immediately after catch end, between runs, so that it reach the next higher feed rate run equilibrium immediately. Total throughput was the aggregate weight in the four catches. Walker loss obtained by separating the "lost" grain in the straw walker catch bag using a converted electric motor driven M-F 35 combine with hydraulic lifted hopper to feed it's cylinder, and catching the grain in underside trays. Lost grain was further cleaned in a Clipper Cleaner at the side of the building, before being weighed on a butchers

scale. Small amounts could be weighed on a balance scale. Similarly shoe and returns loss could be measured. Grain tank grain catch was weighed by a large dial spring scale. Returns catch could be rethreshed if required by rethreshing through the M-F 35 cylinder. The loss catching gear was refined over the years to air activated mechanisms to swing the bags under for a timed cycle catch. The swing arms' three bolt and pin mounting, was somewhat universal only requiring small adaptations to fit most combines. Grain and returns' catch was caught by air operated diverter door.

Results were presented graphically as exponential curves of grain throughput horizontally against various percentage losses (walkers, shaker shoe, total loss, Etc.) vertically. Many extensions and iterations of the loss concept were possible but the above summarizes "loss testing". I could wax poetic about it but the intense sweat and dust associated with the operation here and in the field is best forgotten.

An elaborate waste disposal system had to be developed to rid the lab of the great amount of refuse produced. Between the conveyors and under the combine was a 6' wide 4' deep trench with chain and slat conveyor which drew spilled straw and combine effluent to a pit with vacuum system duct. The chaff and loose grain was cleaned up by an elaborate (Geoff Cooper designed) vacuuming system with overhead 14"pipe ducting from the fan to six dropped ducts with door sealed openings at floor level, into which seeds and chaff could be swept. This emptied, by an outside mounted cyclone tank, into a farm trailer. Straw and chaff from combine was processed, was by an electric driven M-F baler, bales being pushed outside trough a trap door. Local farmers disposed of the "chaff trailer" and excess baled straw. Clean grain was saved and stored in the unloader test grain tanks for further use.

We found that results from the comparison combine run with the same crop (from the same field stored in the same mow) were compatible from one time to another (week, month, even year). Thus a series of series runs with a very specific crop and setups could be used against an established base, without re-establishing the base for comparisons for that single mow of identical crop, providing the same crop and load, was loaded on the conveyors with the same care (preferably spread by the same individual).

Threshing lab tests were not restricted to the above, but included high speed photography of materials passing through the cylinder (we used a Fairchild camera). Cylinder action in other crops such as the splitting of beans was observed. The cylinder/stone trap interaction and proficiency was photographed and anything else desired. Evaluations of baler, corn head action, straw spreader and choppers, grain pickup units, header auger transfer, competitive machines and components were made. There was a special shoe rig to evaluate the cascade shaker shoe, etc. Even corn harvest was poorly attempted. Corn stalks, hand cut from the field, were clamped along a conveyor to feed the corn head. This was valuable in analyzing snapping roll performance etc. using high speed movies. A full high speed analysis of the performance of stone trap and how stones reacted when hit by front beaters and cylinder rasp bars was made. These are but a few of the activities at the threshing lab and test track.

Storage of sheaves became a problem as Markham moved from a farming community to residential, and it became necessary to construct a wood frame, steel clad crop storage building

to the west of the lab. It was 60'x60' x24' high (again built by McClintock Construction), built in the 70s. Crop was hauled in though a tall overhead door and mowed to the roof in three stacks with clear center way into which sheaves where pushed though double doors into the lab. Unfortunately it burnt down to the ground in the early 80s.A crop conditioning room was included in this storage building where crop conditioning could be used to change crop moisture content to more represent field conditions. The concrete block room was fully automated for temperature and humidity control. Crop was placed on 4'x4'x5' high racks and moved by fork lift through insulated double doors from storage and to lab. Crop was left for a day or two to reach the desired moisture before use in the lab. Rice crop was brought in to evaluate specific conditions.

Crop could be brought into the lab through another overhead door and used directly. One advantage of having this open space was that we could move in a number of full wagons here and into the dust tunnel should a typical Ontario thunderstorm threaten.

LIFE AT THE TEST TRACK

Primary, track employees were local farmers and farm lads who through urbanization (often ending up selling these farms for millions), displaced from their chosen occupation but with wonderful agricultural/mechanical back ground, exactly what was needed. Many were mechanic tradesmen with fitters and tool makers' skills. All seemed to be gregarious, friendly and self motivated, so that they fit in perfectly with our field customers. They performed all functions, mechanic, machinist, fabricator, assembler, test track operator, farm laborer, truck driver, test reporter; etc. Stu Allen oversaw the whole operation like a mother hen. He established work schedules, balancing track, threshing lab, fabrication, field test and miscellaneous labour demands perfectly without upheaval. Should a new recruit require living accommodation, Stu found it locally at Hagersmans Corners (14th and Kennedy road) or somewhere in Markham with some friendly widow lady. Friendships between these guys and the accommodating families went on for years.

Normal field maximum rotation had been 8 weeks, as travel was expensive and time consuming before widespread air travel. Soon it was reduced to 6 than 4 weeks. Many would stay out for months as it was "all found" and they could save money and enjoyed the work. A further incentive was the 60 rather than 40 hour pay per week that was paid while in the field. This was no give away because work days were generally longer and we worked most weekends. Others, with family responsibilities, would need adjustments, or fit into trucking, short investigational stints etc. Two or three major stints per year were normal. For some families even this was too much and we tried to accommodate.

These men at the test track did more than just "test". They fabricated parts and assemblies to verbal or engineering sketch or drawings modify machines, built test fixtures, etc. Any job was not too big but simply a challenge. Each spring we would haul prototypes, wide load, from the engineering shop down town to the track. These prototypes often required last minute changes, new parts added, others exchanged or new ones fabricated. All this while

trying to fit in a 25 hour track shakedown test and already a couple of weeks late of southern U.S. harvest commencement. Old prototypes might have to be reworked and updated with new parts from the shop or made at the track. Engines replaced, (Cummins and Caterpillar engines were tried on 760s as well as various Perkins), cooling systems modified such that it seemed that this work never ended. This coupled with track testing, threshing lab, trucking, field work, dust box and stationary rig tests, plus requests by quality control, service and other departments were all accommodated on an A.S.A.P. priority.

But all was not work. If you were bored on the night shift you could always play with the train hauling aggregate stone to the Milliken yard from Stouffville/Unionville on the tracks across the fence to the east. When you got tired of squashing pennies, one could frustrate the train engineer by applying a tube of grease to the track, and watch the need to uncouple half the loaded cars to allow the engine to make the grade.

Morning “coffee time” (not the Markham doughnut/coffee franchise) at the test track was ritual. Someone had to take turns continuing track testing but everyone else came in for their snack (the coffee was always on) and a bit of hellary. Stu mostly provided cheese and biscuits but doughnuts and other treats from visitors were frequent. Also bushels of peanuts (from southern states testing), pecans (from our friends in Fairhope Alabama) popcorn (from Donens in Shawneetown Illinois) were consumed. Lunch was more subdued, some going to local eateries in Milliken or Hagersmans Corner.

OTHER IMPORTANT TRACK ACTIVITES

A stray all-white German Sheppard dog found its way to the track and became family. He was particularly endeared to Clark Major who was amused one day to see the dog as usual, chasing a squirrel at full speed. The squirrel shot up a maple tree and Lance ran smack into the tree knocking himself silly. Lance was friendly and tolerant even to being spray painted on one celebration. It was a track tradition to hold barbecues at the track winter and summer. Everyone was invited, engineering office and shop, visitors and acquaintances (i.e. Dean Percy our local electrician). These were family affairs and lots of fun. Garth would barbecue a couple of roasts of beef with his special baked beans in maple syrup and dash of vodka (half bottle). Marilyn continues to provide Garth’s special beans at our “Massey barbeques each summer to these days. The ladies would bring salad, various dishes and desert. Everyone chipped in. I remember one time when Garth’s son, who managed a local McDonalds brought the orange dispenser and set up in the “Dust Tunnel”. Joe Girodat’s son Joey, age 4 or 5, saw the dispenser and his eyes bulged and he streaked over, had three glasses, bolted out the door and having made room for more was back into the orange juice. The same bunch of Joe and Madeline’s boys brought their small motorcycle to the big expanse of pavement at the track. Later after significant indulgence it was time for the bigger boys to try it. I supported scraped arms and nose for a week after going over the handlebars having inadvertently applied the front brakes before the rear brakes.

I wasn’t the only one to fall victim to over indulgence at one of these barbecues. John Lee, the next morning was heard muttering to himself, “silly old bastard” as he picked up and

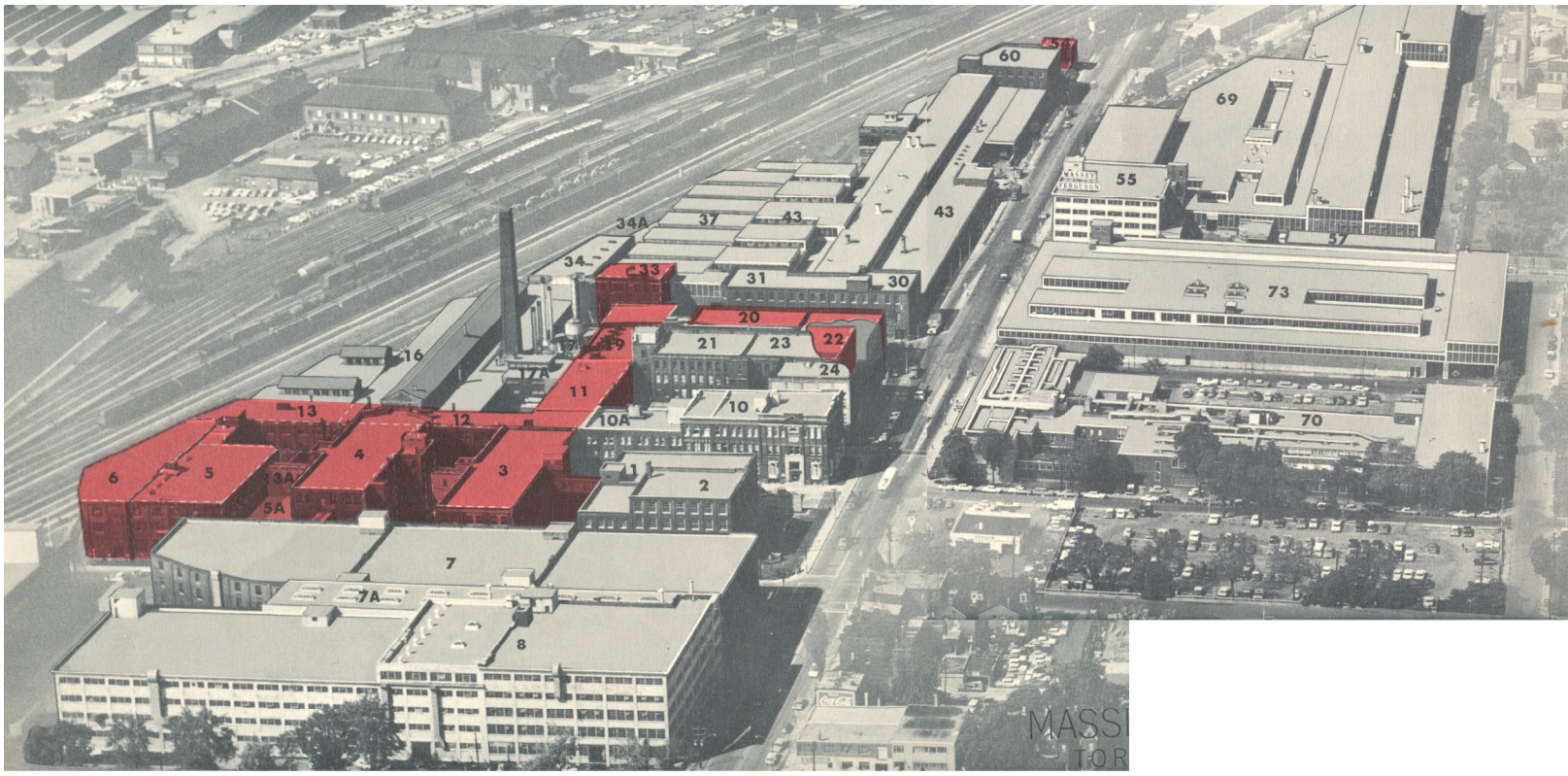
sorted the nuts and bolts back into the bin that he had knocked over when he stumbled out and slammed the door the previous night.

As evening wore on at these barbecues it would be Garth and his guitar singing around a camp fire. Still a fine day like that wouldn't be complete without Clark. I remember him feeding a begging Lance the string from around the roast. Down it went in one big gulp. I often wondered how that passed.

A picture of Garth, vividly comes to mind as I write, standing over an axial flow fan he was fabricating and welding. It was the times of a Pope's visit to dedicate a new local cathedral at nearby Victoria Square. Garth is standing over his creation wearing a cardboard mitre on his head with appropriate cross cutout in the front, with arms outstretched, blessing his good work.

Garth use to take a week holiday each fall to hunt moose with some Bracebridge friends from home in the Muskokas. We all thought that with Garth this was just an excuse for a party as we never heard about or saw any moose steaks. One year during moose rut, a wild one was wondering in Scarboro and Markham and ended up in the corn rows north on the test track property. Sure enough Garth was after him with his gun. Conservation Authority, Garth up one row with the moose walking calmly down another. We thought it was a damn poor hunter that needed his quarry to come down to the big city to find the "big game hunter".

MASSEY FERGUSON KING STREET FACILITIES



LOCATION AND BUILDINGS

The M-F facilities consisted of the 955 King St. building on the north side (between Massey and Crawford Sts., King and Adelaide) had been built to house Canadian management and a full length showroom along King. While I was there it had been converted to offices, the lower floor to accounting, product service and computer facilities (on Massey St. on the east side), with manufacturing process planning upstairs. The engineering department had the rear two thirds of this building up to Adelaide St. with management, drafting office, blueprint room and electronics/testing to the rear on the second floor. The engineering shop was below with a large overhead door to Adelaide St. Forward of the machine shop was a mechanical/hydraulic test area. To the rear east side was welding and paint booth. Along the rear (Adelaide side) was a large multi bay assembly area with overhead crane. The engine lab and mechanical chassis test pad was to the west with overhead door opening onto Crawford St. at the Adelaide corner.

The next building to the west, between King, Adelaide, Crawford and Shaw was the factory machine shop. The smell of lubricating oil filled the air inside and out. Next across Shaw

St. to the south of the “999” Queen St. institute was “The Combine Plant”. It had a railway spur from the west and a delivery alley on its north side. A series of large presses along the south wall produced the larger sheet metal panels. The assembly line along the north side produced the M-F models 60, 70, 80, 90, 92, and pull type combines were built here. Later the M-F #300 and #205 combines were assembled here. The area had security problems, particularly as the combines were using gasoline engines and components easily mated with car engines. I t was reported that one enterprising theft had managed to acquire a complete engine. Johnny Cash with his song “One piece at a time” had nothing on these guys. North side buildings were connected by two tunnels under King St. Some enterprising individuals had installed some deep freezers down there and ran an illicit action. I made a few arrangements to have ten pounds of cheddar cheese or twenty pounds of frozen Alaska crab legs put in my car in the Engineering parking lot just before going home.

Buildings on the south started in the east with a three story building on the S-E corner at Strachan (the Massey renowned Palace Hotel and Bar stands on the N-E corner of King and Strachan). It was here that implements, balers, and swathers and early corn heads were assembled. Bale chambers were built on the second floor and dropped through an opening for the baler to be assembled and shipped via enclosed railway spur loading dock. West of Strachan south of King and south to the CNR tracks the original Massey plant continued to the “Dufferin Street” underpass. The free standing building at the S-W corner of King and Strachan, I called “the Parts Building”, but it had and was used for everything from war production to cream separators and other manufacturing and offices.

The next west was 955 King St., the only building still standing today is zoned “heritage”, and was the original head office which later moved, as corporate offices, to the Sun Life building at University Avenue and Adelaide Street. While I was involved it housed U.S. management and Canadian sales staff including accounting and factory management. Next to the west was general manufacturing, buildings interconnected to the foundry and forge shop behind (this being across King St. from the machine shop). The foundry/forge had power supplied via overhead line shaft fitted with a long line of large wooden spoke drive pulleys. These used flat belt drives to drill stands, presses, multi ton drop hammers and other forging equipment. It was all driven by single cylinder steam engine with about a ten foot diameter drive pulley. The steam boilers were below this in the basement. The foundry etc. closed in the early 60s. An entrance here, straight opposite Crawford Street, was the scrap yard, long operated by a Mr. Ruben.

Behind here a series of interconnected buildings housed sheet metal preparation. Rolls of steel was sliced and stacked then moved to nearby punch and forming presses. There was a specially designed rolling machine to progressively roll the side trim pieces on the combine. Massey used mostly steel rule dies, relatively inexpensive, short use dies, made in house. I remember watching one specialized machine that made straw walker mats by a progressive die method that trimmed and punched the holes before folding into the mat corrugations. Another specialized machine designed and built in Massey tool room made straw walker cranks. A straight steel shaft was fitted with spacer washers (spaced to locate the wooden straw walker bearings) and clamped bearing locations. The rod-shaft was almost instantaneously induction heated to cherry red. Immediately the clamps were hydraulically cranked and formed the exact

walker crank configuration. On removal it was heat treated elsewhere to specification completion. There was a full heat treating facility with furnaces, quenching and lab facilities in the foundry/forging area. Walker crank machines were a Massey specialty, designed, built and sold to our competitors, as Massey owned the “state of the art”. Most tool age was designed and built in house in a large tool room complete with many fitter/turner professionals and large tool storage area. A pattern skilled workshop made wooden patterns for foundry molding until foundry operations was shut down.

Further west along King St. was a long (narrowing to the west) building where the M-F #35 combine was built. The 2000 series tractor cabs and later the 4000 series tractor cabs were also built. Behind this row of buildings bordered on their south side by the railway line, was a mammoth bunch of interconnected buildings. These were connected to the tunnel system and underground storage. It was in these buildings that the majority of parts and assemblies were welded and finished. Stamping, drilling, welding, etc. occurred in ever available space. Combine transmissions and final drives were assembled with the front axle here. This was at the south eastern corner where Strachan meets the rail tracks and where a spur siding met a long loading dock. The huge John Inglis Appliance factory sat south of the rail lines extending to the Canadian Agricultural Exhibition grounds south of that.

TORONTO ENGINEERING DEPARTMENT MANAGEMENT

Walter Watts had been replaced by Don Horne before I began at Massey. Don had been at Cockshutt before becoming Chief Engineer at Toronto. Charlie Baker followed until he was moved on to the corporate office. Bob Ashton was Chief Combine Engineer. The general layout of engineering personnel over the decades is listed approximately below. It is difficult to remember and section by dates as changes were frequent and far ranging as programs changed. The replacement of Charlie Baker for example brought Lee Elfes as Chief Engineer who had replaced Herman Klemm as Director of Engineering located in Detroit.(Mr. Klemm had been Harry Fergusons Director of Engineering at Southfield road and oversaw Toronto).

**********ORG CHARTS **********

Management structure was simple and was reflected in office layout. The Chief Engineer’s office with secretary’s office attached was forward, at the entrance from the circular staircase from the “showroom”. Leading directly from this office was the office manager, Bill Miller, with attached secretary. Offices along the south wall windows of the design area housed, from east to west, Ivor Rogers (stress analysis), Karol Godlewski (Chief Field Test Engineer), Bob Aston (Chief Combine Engineer), Frank Newhouse (Chief Implement Engineer) then Bill Miller’s secretary. Beyond this, to the north were three rows of “Design Engineers”, then further to the north, row on row of drafting boards and tables. Further back was the checking section and blueprint room managed by Don Holliday (later by Boris Tippof). Beside this were the offices of Bill Cox (Mechanical and Engines Lab Test Engineer –ex Avro Arrow/Pratt-Whitby Engines-) engineering standards and library. Further to the north and west were a series of electronics and testing labs run by Bill Cox and electronics engineer Pete Smith.

EARLY DAYS AT TORONTO ENGINEERING

Massey policy was to have young engineers, fresh out of college as “junior engineers”, train through experience in track/field test, the downtown mechanical labs and the design office including drafting, for about three years. In my case I worked for the first year at the test track and in the field for the first few years with stints in the office writing reports etc. Later when Allen Neal advanced to Chief Test Engineer with Karol’s move to Grace, I became his assistant, managing the office and the field. My next move was to combine maintenance of the 410/510 combines with Steve Kwiskoski under Keith Byrnes and became liaison engineer between the new combine manufacturing plant on Park Road in Brantford where the 410/510 were being introduced. This was a challenging time, as I spent long hours at the plant. It was managed initially by Frank Badger with Jack Busk (a Canadian Corporate appointed assist to the plant having worked M-F plants in France, U.K. and Australia). John Mills became factory floor manager to supervise the build. He was followed by Syd Pass an ex Cockshutt factory manager. Product industrial planning was managed by Reg Weaving, quality control by Norm Slaughter and purchasing by George White. Badger’s excellent management had the feature of face to face approach which included daily lunch in the executive cafeteria, where managers related their existing problems. One can well imagine the pressures upon a young engineer faced daily by this group of seasoned professionals while trying to sustain situations.

The official plant opening was a major event. A special train came from Toronto with visitors. Production engineering personnel stood strategically aside to conduct tours. They wore roses in their suit button holes to distinguish them as tour guides. Bill Yongeston was standing with a group when this immaculately dressed man came up to him and asked him if he had been busy. The man wore a large rose in his buttonhole also and complained that he was being asked questions he couldn’t answer. Bill “Same here, come join us”. Someone later told him it was E.P.Taylor’s standing with him. Bill later worked with Chrysler at it’s new plant in Brampton.

I worked for Keith and Steve during this time and later on value analysis projects with him and Bert Luke (who had been responsible for the M-F 35 combine {PT & SP}). When Allen Neal moved to Corporate I took over the Chief Field Test Position.

Engineering Policy was set from Herman Klemm in Detroit who was seldom seen in Toronto except on V.I.P. visits. Upon Lee Elfes arrival, regular visits were established. These were of a terrifying nature for some, as Elfes could always ask questions of highly technical nature for which you might not have an answer and he would deflate the interviewee. The solution was to admit you didn’t know and Elfes would provide the answer with pleasure.

The combine section, headed by Bob Ashton, was split along project lines. Keith Byrnes overseeing units already in production like the model 92 combine, then taking over the 400/500.The 18ft header and diesel engine adaptation was done by his group. Bert Luke handled the #35 combine until it went out of production, then he joined Keith’s group. Les Kepkay was project engineer on the TX develop in the early 60s (future 410/510) before relocating to the UK to engineer the 410/510combine’s introduction to production at the Kilmarnock Scotland plant. Bill Weber (who had once been project manager with Bob Ashton on cream separators) had the future M-F 300 combine project. Roy Gullickson with junior engineer

Jim Alexander (later to follow Karol Godlewski to Grace then back to S-W Ontario to preside over a local manufacturer of car jacks and door handles) looked after corn heads. Jim Butler followed them as corn head/grain header project engineer. These project managers oversaw the design through a bunch of junior engineers and draftspersons (there was one outstanding female designer who returned to UK to work with Kepkay and two ladies who had come from Eastern Europe).

The implement section, headed by Frank Newhouse was similarly divided. Bill Twidale handling PT&SP swathers, Stan Edmonds and Walter Riekman looking after one-way discs (built in the Strachan Ave. building), offset and tandem discs, and the older products like two row corn planters, manure spreaders etc.

Bill Miller had worked on the Pony tractor but was now office manager overseeing the drafting office, managed by Charlie Roberts then by Don Holliday and then Boris Tipoff who replaced Don. They also managed the blueprint room and storage of original drawings (under Marg Clough). The engineering shop managed by Steve Lakeman (with longtime office assistant Ab Upward), also fell under the office manager's wing.

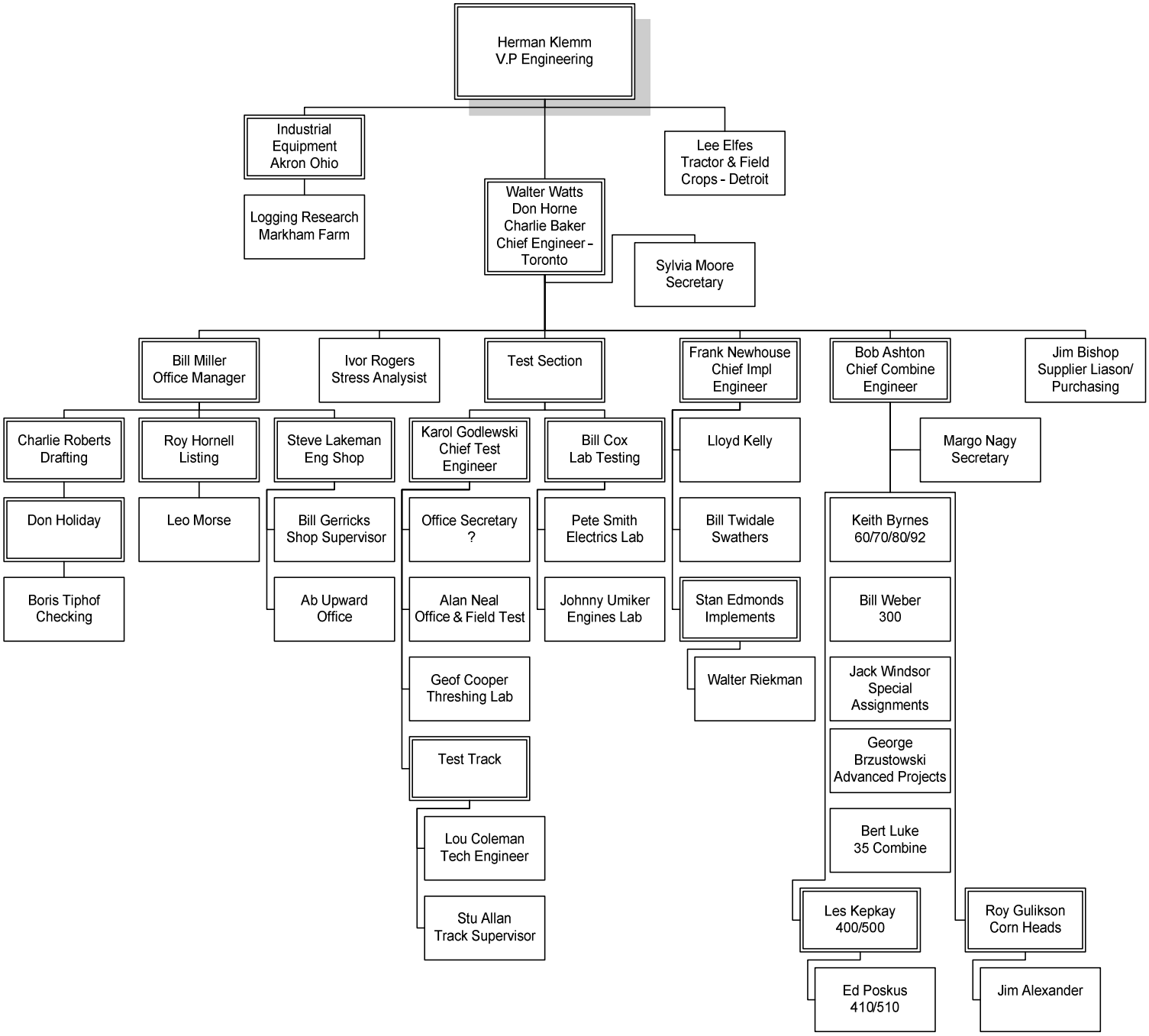
Bill Cox managed the engine lab with Johnny Umiker and the mechanical/instrumentation labs at King St. with Pete Smith (later to establish a firm in electronics for the mining industry, on my recommendation, with my neighbour Frank Amoine – followed by teaching career at Lakehead University). Bill also looked after engineering standards (eventually followed by Walter Scott) and the engineering library.

"Listing", the issuance of manufacturing component lists from the drawings, the issuance of part numbers and R.C.D control (Required Change to Drawing) was headed by Roy Hornell, then Leo Morris with the able assistance of Jim Donaldson.

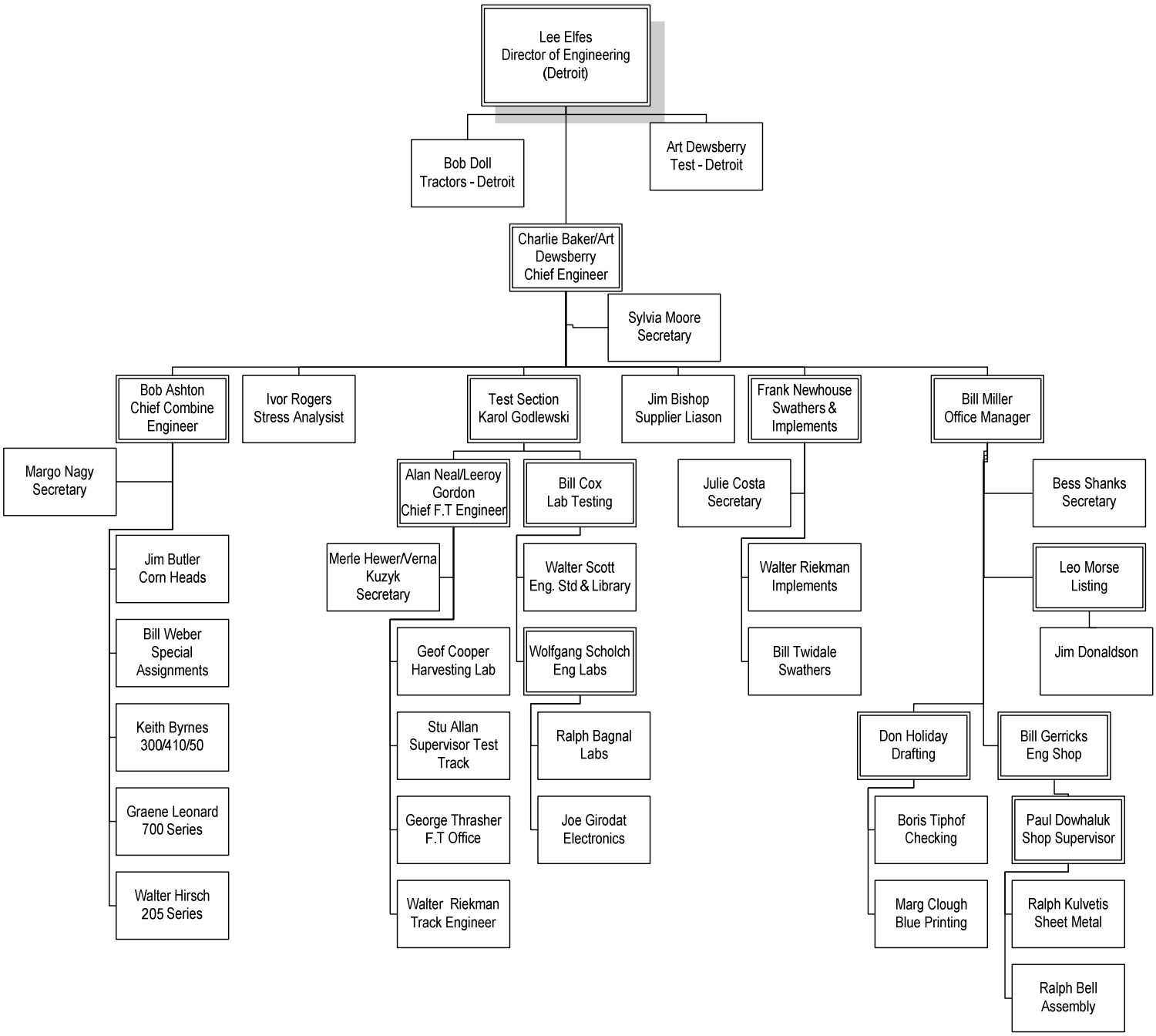
MASSEY –FERGUSON ENGINEERING DEPARTMENT

556 King St. Toronto

AS IT STOOD WHEN I STARTED IN THE 1960s



Mid-Term 1970s

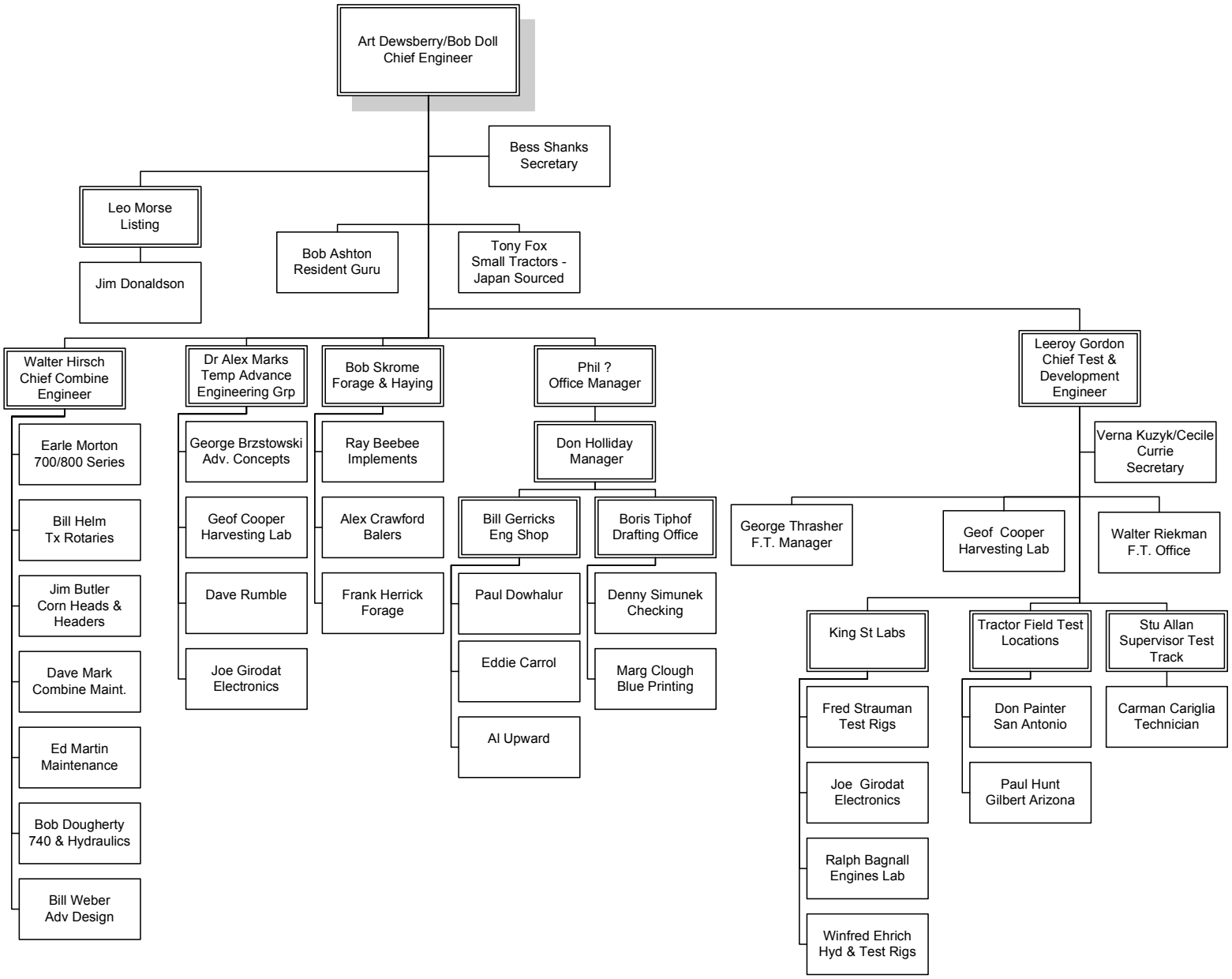


C.H.E.C. CORPORATE HARVESTING ENGINEERING CENTER

MASSEY-FERGUSON LTD.

TORONTO/BRANTFORD

INTO BANKRUPTCY - THE 1980s



DRAFTING OFFICE

The drafting office operated with designers expanding engineer's sketches, ideas, assembly drawings or simple concepts to formulate larger full assembly drawings. Toronto Engineering was recognized to have very high drafting standards. Once these were accepted, large size draft paper was used for factory assembly drawings with components lists and test specifications etc. A group of part numbers was allocated by listing and the major assemblies were distributed to various draftsmen to detail subassemblies and individual parts. Every assembly and individual part had its unique individual number from then on. Standard parts already numbered were included in the parts list. Drawings were on M-F standard drawing sizes A, B, C, size and larger size drawing paper, each issued a part number (generally 6 digits plus a suffix (M1for single parts and M91for assemblies), components list if an assembly, a scale and title block (containing a place for the date, draftsman's name, material , checkers signoff, project engineer and chief engineers approval). Detail specific assembly instructions and testing requirements may also be included. Along the right side a column was provided for R.C.D. design changes. Once the part was released to production any significant change registered suffix increase (M1 to M2, M3, etc. or M91 to M92 etc.).Parts and/or assemblies had to be total replacements interchangeable for the original part otherwise a new part number would be required. Each major assembly drawing and all components passed through a checking section (primarily Boris Tipoff and Denny Simunek) which verified dimensions etc. and subjected the drawing to M-F high drafting standards. Some parts with existing strange numbers from the past, often 4-6 digits with "A" prefix and/or "X" suffix, mostly standard parts, were listed from a catalogue of hardware, bearings, belts, etc. New standard parts, their numbers etc. were Walter Scott's responsibility.

Drawings were stored in metal cabinet drawers in the blueprint room. Requests for blueprints, sepia copies, or the original drawing (signed out for) were requested at the counter and quickly filled.

Project engineers, through their designers, constructed MCLs (Material Components Lists) which went to the engineering shop to make or procure the parts and assemble the test rig, subassembly or complete prototype. The list was processed in the shop office into outside proprietary or special build source, factory source or fabrication in the engineering shop. The engineering shop was divided into the following sections, sheet metal, machine shop, welding, paint booth, parts crib (with gopher to acquire existing M-F parts or collect out-sourced parts) and an assembly area (foremen Ralph Bell and Rolly Gagnon). The near complete prototypes were delivered to the test track as over size loads by field test trucks and drivers.

MORE EDUCATION

While at Massey I continued my education by attending evening courses at the University of Toronto in business, economics, accounting, manufacturing, marketing and production at what was to become the Rotmam School of Business (well endowed by Massey-Ferguson). I had received my Ontario Institute of Professional Engineers certification (enabling me to use the "P.Eng" title to follow my name). Membership in the British National Institute of

Agricultural Engineers ended in a fellowship (allowing " F.I.Agr.E." to suffix my name).I was a member in long standing with "A.S.A.E." , and a founding member with Keith Byrnes of the Toronto chapter of the Canadian Society of Value Engineers. Lectures and study courses continued at these institutes. Through the years I have sat on the engineering curriculum board for George Brown College and advisory board of Ontario Agricultural College (with Dean Switzer and Don Valance – the eminent wine producer) which honor me with the title of Honorary Companion of the University of Guelph.

FIELD TEST EQUIPMENT

Field test section processed a range of vehicles. They generally consisted of Chrysler/Dodge vehicles when Massey used mostly Chrysler engines, but graduated to General Motors with their engines in the 410/510 series. When I began they were using a Dodge Carry-All type vehicle, but we moved from Chrysler to a GM station wagon (for group transportation) and four or five GM half ton pickups. These Canadian licensed vehicles moved primarily in the U.S.A. to transporting men, tools and equipment, and pulling workshop tool trailers or a gooseneck trailer with test equipment.

Tool trailers had begun with one made for us by Babcock-Willcox (hence its name "The Babcock"), a twin axle, extremely heavy box, 12 ft. long by 8 ft. wide and 8 ft. tall (you could stand up inside}. Tools, hardware, and parts bins along the sides, gasoline engine with arc and acetylene welding facilities all want to making the unit unmanageably heavy. It had space enough for a small sheet metal brake and sheet metal shear on a tripod stand. The tongue formed a flat work area with an anvil and vice. Sides folded out for shade. Center corridor was accessed from the rear. I pulled this ungodly unit to Arizona my first year and had a flat in the desert outside of Roswell New Mexico at 100F temperature and no firm ground or proper jack to lift this monster. A Lincoln welder on two wheeled trailer with fender mounted small tool boxes was another unit

A superior unit was the "Longhorn" trailer which had truck type toolbox sides on a single axle, center covered with swing down sides that functioned as benches. The above units were gradually replaced by our own designed "Hobart" trailers. These also had toolbox sides on a torsion suspension two wheel trailer, fold up center cover and fold down rear door which provided a wooden work table with vice and base for a vertical drill. The welder/electricity supply was a Hobart combination with Wisconsin air cooled engine. Fold down side doors provided work benches and access to hardware and tool bins. Welding cables and power cords were kept in one front vertical compartment and lubricating equipment in the other. Oxy-acetylene welding and cutting was provided for, but cylinder exchange was difficult for venders when we were constantly on the move (we borrowed cylinders from customers or dealers when needed). Three of these Hobart units were eventually equipped. Custom operators, customers and just plain visitors envied and wanted to buy these units once they saw their versatility. Tools included socket sets, ¼ to 1'' drives, rolls of open –closed end wrench sets torque, wrenches, including the full range of small tools for a 4-5 man operation.

Each prototype had its own “sundries box” (1/2” plywood 6 by 4 ft., 3ft. deep, hinged lid, reinforced with end handles to be lifted by truck crane (two men could just move it when empty),where spare parts, (bearings, belts, etc.) and replacement and trial parts were kept.

Pickups had top opening tool boxes behind the cab with dual complements of tools, some hardware and parts. Tool trailers were particularly effective as they could be dropped in the yard or field and used while the pickup did other duties. They would be locked up in the yard overnight. We tried vehicle telephones in the vehicles but as the technology advanced, we couldn’t make connections with our manual ring-in, against the advance automatic ring-connect system beginning in the heavy populated areas like Phoenix. Would that we had cell phones! Our best method was to have the customer we were working with, provide us with mobile phones with access through his base station.

Additional to the above we used a gasoline engine stake truck to haul parts, headers, swathers, etc. Timely delivery necessitated we control delivery to the field. We had used the railway (for PT combines to Western Canada, crop harvested by our own personnel and binders in the U.S., then by boxcar to the threshing lab storage), but delivery was frustrating. Karol had begun oversize load haulage on low bed Trailmobile trailers using field test personnel as drivers. We began with single axle GM gas engine tractors graduating to larger dual axle tractors necessitating newer King manufactured trailers. Eventually in the 70s we went to a v-12gas engine (two v-6s back to back) GMC tractor with air conditioning and appropriate gearing. We had stuck to gasoline because of its availability in that era. Finally in the 80s we began to contact haulage as by then more combines were taken direct from the factory by truck and service greatly improved. We did the licensing and permitting ourselves from the downtown office. Each truck tractor was able to be fitted with a 12ft. lift tripod crane (carried under each truck) using the truck wench located behind the cab as the lifting device.

The “V-12 was a big hit with Garth as you might imagine. He liked to sit at a stop sign when “bob-tailing” and rev up beside a hot-rod guy and watch his face when an old red truck beat him in the first 200 yards. Garth would have stuck it in third gear and floored it (all kinds of torque but once he had to change gears he was dead in the water).That was fine but after this the hot-rod would leave Garth in his dust and Garth with a smile on his face.

Vehicle maintenance and tool trailer reconditioning was done at the test track during winter. Ernie Smith and Bob Cunningham did engine rebuilds, brakes, etc. Brakes were particularly troublesome on the small wheeled low bed trailers. They often burned out the tire valves and had tire rim failures due to overheating with the small fast rotating wheels and large close to rim brake drums on long downhill’s like The Donner Pass,-Nevada to California.

EARLY TESTING

410/510 TESTING

My first year field testing started in Chandler Arizona south of Phoenix in May on Bogles Ranch. I had brought the Babcock and others had hauled a TX prototype, M-F Super 92, 300 prototype and headers. The TX combine now had the crosswise mounted engine and countershaft. This proved to be a decided improvement, but the heat on the operator remained. By then they had settled on Cessna hydraulics but the 300 still had Bendix. The Cessna hydraulic pump was driven off the front of the engine crankshaft. The mechanism Raybesttas – Manhattan poly-vee drive belt was engaged by over center idler pulley from large engine output shaft pulley to countershaft. The grease able bearing on engine output shaft incurred failure due to dirt ingress. Ineffective sealing of the radiator intake screen was a continuing problem throughout the 410/510 series history. Originally the screen had an aluminum frame (used in UK with yellow painted scroll on the screen diameter). This was removed in favour of a corrugated diameter. Sealing was never totally successful despite trying rubber, felt and brush seals. Our

customers continued to experience dissatisfaction. The 540/550 combines progressed to a cyclone entry with much improvement. The concave had eccentric quick drop rear concave hangers to aid in cylinder plugs. We experienced some cylinder drive belt failures and underwent exhaustive lab, field and customers testing with Gates and Goodyear to improve belt life. Once belt life was established we began to experience cylinder gearbox failure as the belt design slip had been anticipated to provide protection. The rethresher was changed from rubber flails to heavy cast rotor. Some other belt problems continued which were corrected. The 18Ft. and wider headers gave problems as the unloader pipe now had insufficient reach. We corrected this by fitting a rubber spout, under slung, drape to spout grain further out. This was made from masticated rubber from old car tires as were rear beater and walker curtains in production. They were supplied from National Rubber (owner Julie Gross also owner of the Brown Derby Tavern of Yonge Street fame) who traditionally supplied grain elevator paddles made from used car tires. They also supplied heavy rear beater curtains from tire carcass and masticated rubber curtains for further back on the straw walkers. Here was a company doing its best to recycle before the tree huggers even thought about it. The best job of car tire recycling I've seen was in the Andes in Equator South America, when in the markets where they use tire carcass for everything from sandals to cooking pots.

We were testing all Cessna hydraulics (pumps, valves and cylinders) .Previous combines had used Bendix, but Cessna was being tested as alternatives (fear of supply disruptions with a single source supplier).Representatives of both companies would visit. We were in the final evaluation of the 18ft. header. The 300 immediately worked well, except for the shaker shoe short comings which were corrected when Tom Carrol noticed the reduced lift action caused by rear hangers being designed to run through a 5 o'clock to 7 o'clock arc rather than the traditional 6 to 8 o'clock.

We also experienced traction belt slippage to failure and short life conditions. A rig with dynamometer had been setup to test traction belts from our suppliers Gates and Goodyear in the downtown testing lab. Although no end of belts were tested there never seemed to result in a significant breakthrough. Testing was ongoing with our customers as well directly by these suppliers.

LOSS TESTING AT BOGLES

Bogles were a large ranch growing cereal grains and safflower suitable for us to perform "loss tests". Comparative testing, as in all loss testing, necessitated running the #92 combine as the comparison machine, preferably in the middle time slot between the 300 and the TX, in side by side crop strips, to reduce crop and weather variations. This time we were using long canvases rolled out behind the walkers and shoe to catch representative samples once the machine reached equilibrium throughput. This was the British N.I.A.E. established method still being used in Russia in my 70s visit. We later changed to air activated catch bags as in the thrashing lab. Grain tank flow and returns were caught if required in this timed cycle. It all started when Graeme Leonard blew his whistle and the catch was made until the next whistle. The operator (Garth) would stop immediately with the combine full so that on the next run of higher feed rate equilibrium would be reach quickly with minimum use of uniform crop. Weights

of catches and lost grain were obtained and from these plus the header width and measured length of strip cut, the feed rate and the losses for each run were calculated. A series of at least five increasing speeds to get points at progressively increasing feed rates that gave a series of losses between 0 and 2%. The upper feed rate was limited mostly by engine power and/or cylinder plug. This dusty, treacherously hot procedure was repeated for at five runs of each of three or four machines or variations under test. Field yield was calculated from tape measuring the distance of forward travel during catch, multiplied by the header width of cut. This measured area together with the total grain catch could be calculated into yield in bushels per acre. Feed rate was calculated using the weight and time of catch. Details of crop condition, length of straw cut and uncut were recorded together with other pertinent information.

Sometimes changes had to be midway through, in the hottest part of the day (test had to be made side by side, same day, same crop, batch and same conditions, which naturally were most stable around mid day). That evening back, at the motel, graphs were plotted, plotting percentage loss against feed rate for each machine and variation. The results noted by management present, to decide what tests would be run the next day. The system was improved over the years, when telephoned in results were submitted to the IBM mainframe on punch cards by FT office, to produce mathematically fitted curves for comparison. The next day we might evaluate changes to the rear beater, cylinder or straw walkers, one change at a time but all hot hot crawling in over the straw walkers to make the changes, again in the hottest part of the day.

Realizing how demanding this system was, we attempted on more than one occasion to build a system whereby another processing combine would run behind the test combine and process the loss and feed rate results direct. John Deere ran such a highly electronically controlled system/machine in the late80s. Our results culminated in fitting a large aluminum conveyor bottom hopper to an old TX prototype, the conveyor feeding the cylinder, after the catch bags were weighed (by it's mounted crane and spring weight dial gauge scale). Catch boxes for grain and returns from this processor where further cleaned by a small Clipper Cleaner to separate good grain seeds for loss weight.

The "TX loss tester" was a symbol of fatigue and frustration so was treated with contempt. One day Clark decided he would see how well it processed pumpkins growing for seed in a nearby field in El Centro. Firing up the self propelled TX combine he threw a pumpkin into the hopper and "thrashed" it. We spent the next three years picking pumpkin seeds out of the loss samples (they being damp stuck throughout the machine tenaciously) as they would contaminate the sample weights.

Loss testing could never justify a superior performance of the M-F 410 combine over the M-F super 92 combine. This is understandable as both used 37inch wide cylinders the same straw walkers and shaker shoe. Major changes were elimination of a front beater, wide spaced concave wires, use of a rethresher rather than return to cylinder and increased engine power. People wanted to believe in its virtues which never come to fruition in my opinion. The M-F 510 combine had significant performance increase as a result of its 45inch cylinder. The M-F 300 combine performance was never oversold and therefore really liked by out customers.

Pete Bogle had a brother Bob who appeared intermittently, once showing up on horseback. We were much amused when he walked up later asking for help. He was the only person we knew who could get a horse stuck in a grain field. He had tried to go through the waste water at the bottom of an over- watered border and there was no bottom to the backfill during land leveling.

Allen Neal with Ray Hillock's help later arranged with Bogles to allow us to erect a wood framed steel clad building mid-farm to augment security. It was used for many years.

FURTHER FIELD TESTING

July early August, would see harvest complete in Southern California (El Centro or Baker/Blythe etc.) and Arizona (Phoenix area, Yuma or Gila Bend) and we would move to Boswells in the San Joaquin Valley of central California. Sometimes we went directly to southern Idaho (Burley, Twin Falls, or Pocatello) or the Columbia River Valley tri city area of Washington State at Pasco. We might have gone to Oregon (Salem or he Willamette Valley) or hooked up with a custom cutter starting in June in Texas, moving through Kansas, Colorado, Nebraska, Montana and the Dakotas and with some to Western Canada. All this to evaluate machines in different soils, climate, topography, crops and customer conditions, for each and every major crop (grains, rice, canola, safflower, corn, sorghum and others).A list of many locations around the world where we ran field testing equipment in my time follows.

LOCATIONS OF FIELD TEST INVOLVEMENT

These are those I remember quickly so there must be many more places.

Garden Tractors & mowers – Milliken T.T., Airport Bonito Springs Florida – Vern Macklin

Ski Whiz Snow Mobiles – with Detroit Eng, Milliken T.T., Baffin Island–Garth Henry & Clark Major

Implements – Tandem Discs – Arkansas & Western Canada

- One-way Discs – Western Canada
- 12 furrow Plow – In Ontario

M-F 4000 Series Tractor with 8ft Rototiller for PTO test – Salinas Calif. – Bob Leininger

M-F Swathers, SP & PT prototypes – Western Canada

MacDon Swathers and Windrowers – El Centro, Phoenix, Hanford and Western Canada

COMBINES

Cereal Grains

Arizona - Phoenix – Chandler, Maricopa, Coolidge, Buckeye, and with Frank Woods at Gila Bend

California – El Centro, Baker/ Blythe area, Corcoran at Boswells and Sacramento

Idaho – Burley with Company store, Pocatello and with Jones at Twin Falls

Washington – Colombia River Basin with Ben Grant

Oregon – Salem and Willamette Valley and Pendleton

Arkansas – Hughes and Mariana

Montana - Billings

Custom Route with Rick Ferris, Howards Bothers, Max Louder, Freddie Street and others

In Texas, Kansas, Colorado, Nebraska, the Dakotas, Montana, Minnesota, Western Canada, and as far north as the Peace River Country with Woods

Colorado – west of Denver and the Alamosa valley

Oklahoma – Enid and near Wichita falls

Kansas – Liberal, Garden City with Gigots, and Goodland with Rick

Texas – Hartley, Wichita Falls, Lubbock and Brownsville

Illinois – Springfield with Grieme Dealership

Minnesota – Howard brothers

Ohio – With Schmitz Dealership

Western Canada – Medicine Hat, Regina with dealer Ken Nurse, Wadena with Sowa/ Batiuk dealership, Yorkton with Vern Brown dealership, Southern Manitoba and with Frank woods in the Peace River area of Alberta

Overseas – England – Corby, Bury St Edmonds, Salisbury Plains, Lincoln and elsewhere

Scotland – Edinburgh and Aberdeen

Russia – Armavir

Germany – Lutjenberg and Frankfurt

France – Chateauroux and Vittel near Verdun

Netherlands – On the Polders near Lelystad and near Eindhoven

South Africa – Cape Province

Australia – Darling Downs and New South Wales

Italy – Southern Region

China – Manchuria with Garth Henry

Argentina – Various

Brazil – Near Porta Alegre with George Thrasher

Israel – with Mike Kroll

Safflower – Arizona, California – El Centro and Tulare Lake, and Texas

Soybeans – California, Nebraska, Arkansas, Illinois, Indiana, Ohio, Missouri, Iowa, Florida and Brazil

Sunflower – Nebraska, Minnesota and Manitoba

Canola (rape seed) – Western Canada, England and France

Grass Seed, Clovers and Alfalfa – El Centro and Idaho

Vegetable Seeds – El Centro - Onion, Radish, Carrot, Brassicas, Alfalfa, etc., and Twin Falls etc.

Edible Beans – various locations – Pinto, Red, Kidney, Lima Beans, Black-eye, Chick Peas and Horse beans in U.K. etc.

Milo/Sorghum/Millet – El Centro, Phoenix, Texas, Arkansas, Mississippi and Florida Panhandle

Rice – Bay City Texas with Harrisons, Kaplan/Walsh/St Charles Louisiana, Yuba City California

Cleveland Mississippi and Hughes, Mariana, Stuttgart and Jonesboro in Arkansas

Surinam in South America

Uruguay

Australia – Swan Lake District

Italy – Valenza Area in the north-west of Genoa

Wild Rice – in the lake district of northern Minnesota

Corn (or Maize as it is called overseas)

Ontario – All over southern region – Markham, Essex county mostly

Nebraska – Grand Island

North Carolina – New Bern

Alabama – Foley and Fairhope

Arizona – Phoenix

Illinois – Elgin, Batavia, Joliet, Springfield, Ridgeway/Shawnee town

Ohio – Upper Sandusky

Wisconsin – Madison

California – Hanford

Kansas – Garden City – Gigots ; who developed circle irrigation in the rattlesnake sand hills country south of Garden City

Overseas – Bordeaux France, Frankfurt Germany

Sweet Corn – Florida on Lake Okeechobee

New York – Batavia

Ontario – Leamington

Oregon – with Vern Macklin

The above is somewhat disjointed and incomplete but so is my memory after 50 years in the business, for which I apologize.

FIELD TEST OPERATIONS

Field testing included attempts to not only operate machines for maximum usage in many conditions (climate, soil, crop varieties, operator expertise etc.) but also in locations where our customers were experiencing special specific conditions which we might help solve. The prototypes were to be used as our customers would use them when in their hands. Additionally there was the need to satisfy the demands of the responsible engineer, sales force recommendations (even Company stores and dealers), service and the Harvest Brigade. Dealers, Company Stores and known customers were solicited to establish where representative crops might be and where the earliest and latest season's crop could be found. Locations like those near the test track in Markham had crop but lasted only a few days on small acreage. We needed thousands of acres lasting months, to justify moving equipment and personnel. Individual field test personnel would negotiate a non-binding (immediate change could occur through breakdown, engineering office decision or weather) agreement whereby we would supply the equipment and maintenance and the customer supply the driver, fuel and lubrication. The farmer/operator supplied operator, crop and grain haulage and a continuing crop supply (even by stopping his machines or working with nearby farmers for crop continuance). Often, our bringing in four combines would stretch haulage and they would have to hire additional trucks and equipment to keep up to us. Through all this we never encountered serious difficulties (I guess it was because we were providing our part for free, but I believe a lot of the goodwill was the result of field test personnel's people relationships). Once established, true full-life friendships developed between field test and the farmers, operators, etc. and their wives and children. We always received the best help and cooperation in a spirit of friendship

Field personnel were mostly housed in motels, ate breakfast together then left for "the field' by 7am. Noon meal was at a local restaurant, with someone left to spell-off the operator if necessary. Return to the motel after 6pm, a little happy hour, day's outcome discussion and shower would+ be followed by dinner together somewhere. Returning to the motel, reports would be written and ready by 9.30pm for someone to phone in to the office. Thus we lived together like spouses with all those situations except that we could depart to our separate rooms until breakfast next morning. Life-long close relationships were developed between these people who still exist today, twenty five years after Massey bankruptcy in our regular dinners and barbecues. Within this family office engineering personnel, visitors and suppliers were always welcome.

The "field" part of the exercise included machine operation, maintenance, repair, supplies procurement, engineering changes, general farmer/customer /dealer negotiations (often including help with the his repairs, driving his machines, grain trucks etc.).Field testing had the prime object of maximizing test equipment use, even to the extent of 7/24 work where necessary. Compensation in part for this added work expectation was increased wages. While" in the field" employees received hourly rate for 60 rather than the regular 40 hour week, plus "all found". Our customers cooperated whole heartedly, shutting off their equipment or saving stands of crop to satisfy our needs. But they were continually faced with the possibility that we could break down for a week, decide to move on to a specialized crop nearby, or suddenly decide to "move out". Overriding all of this was the weather and/or instructions from the office.

We developed strong relationships with the motel staffs and they couldn't do enough for us. Once in about 1963 we returned from the field in Hughes Ark., south of West Memphis just across the Mississippi, to one of the earliest Holiday Inns, on South Third Street in Memphis. They were celebrating the opening of he two hundredth Holiday Inn. Dirty as we were from the field, we spent the evening with them in pink ballooned entertainment.

All was not just work. Humour and tomfoolery helped sustain us. I remember so much, be it Bill Johnson's cowboy restaurant in Phoenix where the waitresses packed six guns on sawdust floors deep in peanut shells, or Superstition Mountain where if you dared to wear a tie the restaurateur would snip it off. Good food was searched for everywhere. Lunch was found to be good at a Bowling Alley in Chandler. "Ingomar" (a Swedish summer employee nicknamed so by Clark purely because he liked him so much) decided in his limited English skill to order off the blackboard over the lanes "the Two Lane Special". This brought a round of good natured laughter. Not so when he returned to the yard where his wooden shoes were attached twenty feet up on a telephone pole as if nailed. Needless to say no harm had been done as Garth had simply glued them in place and they were easily removed. Poor Ingomar was devastated, but I reckon those months with field test were some of the most enjoyable in his life.

Similar to driving on the test track life can get boring and one day harvesting small seeds near the All American Canal south of El Centro California, Clark was driving up and down the field. He had a grain trailer to unload into but this might be less than once per hour and no one else with him. He watched as Border Patrol pickups patrolled the raked sand along the side of the canal. Naturally this was a challenge to Clark, so he stopped, walked backwards over the smoothed sand to the canal edge then, walked back in his original tracks to the combine. He continued to work up and down the field. It wasn't long before the Patrol pickup came along, saw the footprints and activity broke loose. More pickups, men, even a helicopter entered the search. The combine was waved down and when asked Clark replied truthfully that he had been there all morning and hadn't seen a soul except the Border Patrol.

REPORTING

Field test personnel wrote reports on each test machine each day. Reports included machine test designation, weather, location, crop details and soil and topography conditions. It reported all personnel and visitors, who could expand details later if desired. A page of the day's happenings, and special remarks about performance and changes made was included. Reports were collected and phoned to the office tape each evening. These were transcribed and on the various engineers desks by 9.30am generally. Field questions and instructions to the test site could be taped during the day and received by the field from the evening telephone call. Project engineers etc. could phone the office from the field during the day for consultation. Details of test machine coded problems were transposed, in the F.T. office, onto I.B.M. punch cards (which detailed the information along the top edge). These were filed under test request machine and used to create special reports and final year end reports. Cards could be sorted to answer various requests, like listing all alternator problems over the past three years. The IBM 360 mainframe in the computer department downstairs was used. Oh! How today's technology would have helped, with e-mail used to report in direct to all and sundry, computer storage and

generation of sorted listings of information etc.? We had programs which would sort the cards by year, components, machine, location crop etc. but so time consuming!

Engineering personnel, suppliers, V.I.P.s and general public visited locations throughout, becoming directly involved in finding answers to problems and giving suggestions etc., all to the improvement of the product for our customers.

Completing the grain harvest in Chandler that first year, the operation was split in early July, one unit to Boswells in Tulare Lake bed in California, the other to Burley Idaho. We worked through the Burley Company store on local farms. I remember Phil Barger, the son of a Massey vice president, and became a friend when he worked at the company store that summer.

One remembered incident comes to mind on a relocation move one morning to the west of Burley. Older combines had slower road speed than later models until today some European models have dangerous fast road speed gears. We were moving a variety of combines and had delegated one of the slower ones to a summer student of less experience and he had fallen behind. We eventually missed him and by afternoon sent out a search party. He was eventually found “lost in the hills” when he missed a turn and could have been driving, lost for a week as combines carry enough fuel for at least a long day’s work. I don’t quite remember his name but I think his initials were Pete Smith.

The following year we tested 410/510 prototypes in Hughes Arkansas. Additionally, a tandem disc prototype using an M-F 1100 tractor was evaluated there. By this time Cessna hydraulics were established to go in to production. 92 combine customers were experiencing leaks from hydraulic lift cylinders and a test program was under way in the lab and field with Cessna to improve the seals. Other features being evaluated was a variable speed belt drive to the reel, stone trap with trap door opened by the cylinder wrench from the right side. The stone trap performance had been validated in the harvesting lab.

These prototypes all had the new steering column complete with tilt/telescoping steering wheel, side mounted gear shift and power steering It used a Charlynn column mounted pump with rear axle mounted Cessna cylinder. We experience “kick-back” through the steering wheel which needed pump modifications. Additionally we evaluated Packer-Haniffin steering pumps.

The rethresher cast rotor with rasp bars and simulated concave door was introduced to satisfy part of the disappointment shown from customers with the rethresher concept. This year we began to hear of problems threshing a new variety of hard wheat called “Thresher”, grown in Western Canada. Our wide spaced concave wires would allow wheat ears to pass without full threshing. Wide wire concaves were preferred as more corn was being harvested and removing ever other wire from previously made concaves was difficult and time consuming. We never did acknowledge Western Canada’s need for a narrow wire concave option, though I personally advocated for a special factory option to meet their demand.

Next year, 1964 we tested both 410 and 510 prototypes, one on rice rubber in Kaplan Louisiana, Cajun country. Beyond combine testing, we had SP and PT swathers in Western

Canada and remember there being a one-way disc unit with modifications that year though I was not involved personally.

I became more involved in engineering the 410/510 combines introduction into the new Park Road Brantford Combine Plant. Major Field problems had centered on the radiator rotary air intake screen (an Aluminum frame was originally used – released in UK with characteristic yellow spiral), cylinder and traction drive belts and the durability of main drive Raybestos-Manhatten poly-vee belt. Special cylinder drive and traction belt drive test rigs were constructed in the downtown labs. Dust boxes for belts and bearings also under "field" loads, were run there, including engine endurance testing. A transmission/final drives endurance load test rig was available. Testing was a Lee Elfes demand, wanting a test on the drawing for almost every component. These tests were to be confirmed in the labs and written on the drawings and confirmed pre-production and during production. Individual suppliers were required to test their products to these specifications before supplying components. A full range of hydraulics (cylinders, pumps, drives and systems) and combine electrics testing were carried out in the lab.

About this time, because of operators being heated by the engine proximity, we tried an air conditioning helmet (as NASCAR drivers use) but it proved cumbersome and really not effective. The early cab prototypes used automotive type add-on units, until our own designed units were available. Cab heaters were sold by Massey dealers. These were 8"x8"x8" floor mounted boxes with fan and radiator feed coil that blew warm air at the operator's feet. Some years later, Cadillac promoted climate control (this used a heating coil and cooling core to first remove humidity then adjusted temperature as required to "condition" the air). Our operators were not happy with this when tried later on the new cab because by tradition, heat is required at one's feet and the warm air blowing in their face and upper body was uncomfortable. What they wanted on their head and upper torso was the cool air when they were hot. Even directing the warm air down the windshield didn't satisfy them with enough heat at their feet.

John Lee was sent to Suriname in the Dutch East Indies in South America about this time to test an M-F 510 prototype in rice. The logistics of that operation was considerable. John always seemed to get into difficulties with border customs. I always told him to act ignorant and say little, but John, being English, still had problems crossing particularly in places like Sweetgrass into Alberta. This was a small crossing, not busy so agents liked to nit pick oversize load papers etc. We were legal to be in U.S.A. as we were Canadian paid employees temporally in US for a limited period.

OTHER DEVELOPING PRODUCTS

It is entirely impossible for me to detail the thousands of test requests I've been involved in after I took over as Field Test Engineer when Alan Neal left for Corporate in 1967. I had put the combine cab into production (unfortunately the sliding door was less than a success – later changed to a better sealing latched hinged door), and worked with Bert Luke for Keith Byrnes on value analysis projects. A serious error occurred on a value analysis rear axle. It had passed a full 100 hour track test and field testing, but was experiencing failure once in production. We immediately began track testing with a production axle and had cracks on the underside welds.

We inspected the original prototype axle and with black light found hairline cracks. Stress coating and strain gauges revealed over stressing at the more venerable welds. Furthermore when checked against the drawing and engineering shop we learned the expert shop welder had recognized the need for closer spaced welds and had simply added some. These had distributed the stress more evenly extending the axles life. Factory production and field corrections were immediately made, solving the problem.

The test section was getting through the M-F 205 combine and 405 PT combine and rice track programs. Additionally the test track and threshing lab were under my jurisdiction (details elsewhere).Later we did substantial stress coating, strain gauge and accelerometer evaluations of the drawbar for the model 751 prototype. Consequently what follows is just some of the interesting highlights of twenty years of service to Massey.

Development work continued on pickup reels made by Universal and by Cheny (an all aluminum reel) to 18 and 20ft length. The belt variable speed reel drive with electric actuator switch controlled from operator's console was introduced. A hydraulic drive option was later available. A wobble box knife was developed successfully by field and lab testing. Early units encountered large bearing failures until design improvements were made. Soon we were working on Quick attach headers to 24ft width, which required much lab and test track work to qualify the "header boom" (upper full width carrier of the weight). We worked with Melrose to release a draper pickup made by them for M-F sales. We evaluated a drum type unit (sold in N.A as model #67) being sold by M-F Germany, a smaller drum than our M-F # 55. A Reynolds draper style pickup from UK was brought in and used (also sold here as M-F #67). Reynolds had a factory just north of London on an abundant airport. Two pickups were fitted to a 24ft header and used in W. Canada, for trials.

A conventional bat reel simply pushes standing crop back into the auger, as it is cut by the sickle knife bar, to be laid down by the auger flight and conveyed under the auger. A cut-off is provided to stop crops from carrying around and wrapping on the auger flights. Pickup reels have slat changed angle as they rotate, entering the crop vertically. Spring tines on slats enter the crop sweeping it over the cutterbar to be cut below the harvestable seed-head, then lifting the slat and tines vertical lift out of the crop at the auger flight edge. By then the next of five slats has made its cam controlled circle and is entering the crop for the next sweep. The sweeping speed needs to be coordinated with combine forward speed, or it will thrash the standing crop before it gets to the knife and auger, thus being lost in front of the header.

Header height control was developed to production. Ours originally used a wand between up and down electric contacts (rough usage would bend the wand mounted on the header and tear off the electrics). Height was controlled by trailing skid shoes behind the cutterbar at 6"-8" spacing. A skid dropping into lower ground would mechanically twist the control rod and wand (if no other sensor skid was holding it up).Should the skid hit a raised surface the skid would twist the rod and wand into the rise wand which would cause the electrics to action hydraulic lift of the header until the wand came out of the "raise" contact. A few years later the header height control was incorporated in combination with the floating cutterbar to provide additional height accommodation for less operator input fatigue when low

cutting soybeans. The whole object of course was to cut below the lowest growing bean pods, thus getting them into the combine, and not left with the base stalk in the field. Crop breeders have done much to breed soybeans with pods growing higher up the stalks.

Long harpoon dividers were brought over from Europe to evaluate in tangled crop but although they did the job were never released for N.A production. Perhaps they were too troublesome for our less careful drivers here.

An overshot disappearing finger beater above the straw walkers was tried with questionable results. They called it a “walker Booster”. Other beaters were tried but never very successful but a similar device was produced and sold with success in Europe.

A hydrostatic ground drive system was developed through lab, test track and field operation during the early years. We tested Dowty and Vickers but settled on Sunstrand which continued with size changes into the 700 series combines.

OTHER EQUIPMENT UNDER TEST

Other header work included trails with driving a knife from both ends for extra wide headers. A split header auger carried on an overhead mounted center bearing (unsuccessful, causing poor feeding and wrapping) was tried with a view to much wider headers, even with the idea of two ground floating left and right halves. A prototype pivoting header similar to hillside combines was tried to accommodate 30ft plus headers on rolling contours. A 30ft header was developed and track and field tested. We later had been working with MacDon manufacturing out of Winnipeg on swather/windrower design (Chief Engineer Tom Fox) and persuaded them to give us a old prototype 24ft header that used drapers rather than an auger to convey crop to the center. Increased width would allow for much wider headers (bending deflection of longer augers would prove difficult). Garth Henry adapted it to the Quick Attachment system at the test track and we hauled and tested for a short period in El Centro. The thought was by using the flexible draper it would accommodate unlevel ground terrain using outriggers and allow 40ft or more headers. When reported, this generated absolutely no interest in Massey and was dropped. Some years later MacDon has come out with 45ft headers, to this idea, to fit most combines.

We developed an in house rice draper based on one built in California. Heavy laid rice, typical of California needed this forward extension of the cutterbar to get under the rice, cut it and convey it evenly to the auger. This proved successful and a local manufacturer in Port Hope Ontario made them for Massey. They were so successful that we encouraged evaluation in “down” (flattened) grain in Europe. It was released for build in Europe with great results. We tested “milo” cutterbar extension and Sunflower “boats” as well.

CORN HEADS

The first #22 series two row corn heads developed by Toronto and manufactured in the Strachan St. building had serious problems. All, including those in customer’s hands, were

returned to the Brantford Verity works for design change revisions and complete rebuild. Despite this early setback Massey developed great corn heads over the years of good design. Exhalent results were had by Massey units around the United States in nation wide corn picking contests in the 60s. A full line of corn heads were released, models to eight rows, even successfully evaluating a prototype twelve row 20in unit. One area requiring significant design development was the ”boom”, full width carrying structure, which required detailed stress analysis work to accept the significantly increased loads. Mathematical analysis was followed by stress coating then grid loading with hydraulic loading under delicate temperature conditions to establish areas of high stress and approximate strain levels. Stress coat cracking can be seen best under ultra violet light. Strain gauges were then applied in the areas of high stress and loads reapplied. Redesign followed until satisfied. Downtown lab did most of this, particularly Fred Strauman. Substantial track and field testing followed before release to production. Testing occurred throughout U.S.A and overseas in Germany and France before the six and eight row 20 & 30in. versions were released. These were built for a few years at Verity. Then, after the Des Moines Iowa plant was bought, they were built there together with garden tractors and snow mobiles.

Massey corn headers had performed well in Corn Picking Contests conducted in the 60s in the central U.S.A. Bob Leininger was particularly active in these and with many others from the test section in demonstrations at the Tri-state Farm Progress Shows each year.

SWATHERS AND HAYING EQUIPMENT

While combine design was being evaluated we were running a full range of laboratory testing, track and harvesting lab testing and field testing of manufactured and prototype implements, haying equipment and tractors (the M-F 1100 series in particular). The M-F swather program included the diesel engine adaptations which lead to the M-F #44 designation. A multiple hitch to combine more than one PT swather in line was evaluated.

In the 1970s Massey no longer planned to build swathers themselves, so we had a look at Versatile and Kilbery. I believe Massey did sell some other built, but settled on MacDon as favoured. A comprehensive test program followed, and when MacDon wanted to enter an auger swather/windrower program field test, under my strong comprehensive involvement, did most of the testing, including U.S. locations of El Centro California and Idaho. Eventually I felt a very cost effective customer excepted product was achieved. Massey sold these as the model#775 auger swather and later with a new cab as the model #885. To date I am proud to observe MacDon’s success even in overseas markets such as China etc., where Ken Cappie and Arnot Neals have added MacDon.

Toronto produced balers, complete with bale throwers, were always given their 25 hour track shake down test before shipment of a new production run. When Massey decided to market the Vermeer round baler it began with a track test.

We had a program that fit tandem hitches to customer one-way discs in Western Canada and these were released under Stan Edmunds jurisdiction.

CUBA TRIP

About this time, Massey management thought there might be a possibility of rice combine sales to Cuba. Carl Nygren from Corporate and I were dispatched to Cuba for two weeks to discuss this with their agricultural community. We were housed in the Havana Libre (originally the Havana Hilton) where the entry doors were permanently guarded open (repair parts mechanism unavailable because of American embargo). The interior facilities cracked, worn and corroded (I was fortunate to sit in comfort, Carl was on the cold raw porcelain). No success in combines but we enjoyed our stay and visit with M-F employee Noel Schutte. Massey had sold two shipments of about 400 Sugar Cane Harvesters from Massey owned Bundenberg Australian plant. When one mentions Bundenberg to an Aussie his mouth waters as this is where they grow their sugar cane and it is synonymous with the rum they distill there. Noel and some six Aussie mechanics and some families were back for a second year to service the machines through harvest. True Aussies, they upped the anti that year, so they were housed with their families in a three house walled compound that had been owned by the Bacardi family (before it moved its headquarters to Canada after the revolution). Negotiations had resulted in Cuba arranging for "service" required goods once deposited on any wharf worldwide to be transshipped to Cuba. Land Rovers came from England with other goods which the Aussies sold locally before leaving. But as you know they needed beer from Australia. I was told it cost less than 5 cents a bottle, direct from the brewery. Forty eight sounded about right- not bottles, not 24 bottle cases, but pallets each with 24 cases. The three car garage couldn't be entered when were driven up to have dinner at their house. It was chocker block packed with beer. The sugar cane harvester was a big success, so much so that in the future years it was reproduced in the Soviet Union where Cuba could trade for them with sugar.

While in Cuba, we were honoured with an invitation to cocktails at the Canadian Embassy. Very nice! We spoke to a Canadian Professor, an expert in dairy husbandry who C.I.D.A. (The Canadian International Development Association) was sponsoring together with a group of students. The Professor was bragging how he and his students had been out all day in the hot sun cutting cane with "the locals". He by himself had cut nearly a ton of cane. He wasn't at all conscious when we told him we had been out with our machine which cut and loaded forty tons per hour. And we wonder why we wander how our taxes are being spent! Wouldn't our professor's time been better used in teaching his dairy husbandry knowledge?

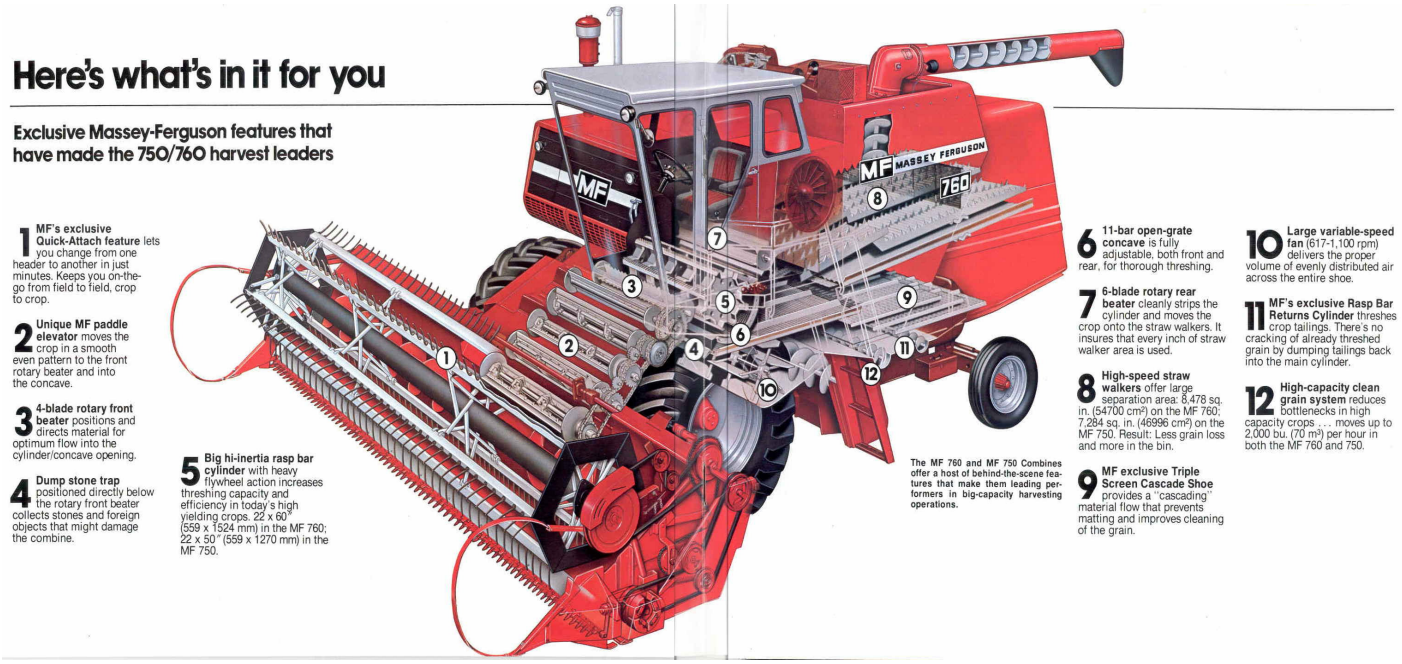
SUGAR CANE HAVESTER

Toronto field test assisted M-F marketing to introduce them in Louisiana and Brownsville Texas, with no success despite the imported labour crisis (to manually cut the cane) and the demand to stop burning cane fields. U.S. Sugar in Florida was a particularly hard sell as they had developed and built their own cane cutting machines and separate mechanized bunch loaders to load standard transporters.

I've been pleased to see almost identical yellow machines to the Massey ones working in southern Texas near McAllen, which cut to the same one foot lengths (perfect to use for

planting without further preparation). It uses the same conveyor layout and leaf extractor fans, self unloading into road tractor/semitrailers at field's edge

THE 700 SERIES COMBINE



BEGINNINGS OF THE 700 SERIES

The first new TX series that was the 700 series prototype was conceived under the project design control of Walter Hirsch and Graeme Leonard, with able assistance of resident stalwarts Jack Winslow and Bill Weber, and of course Dick Gerricks in our drafting office. Bob Aston oversaw the whole project. We tarped this first prototype partially boxed during transportation to the south, to keep the curious away, which proved to be entirely hopeless. Firstly it was impossible stop the tarps from blowing and ripping because wind got under the irregular shape. Also as they were driving through farmer country, at every stop something covered with a tarp with red poking out was just a challenge. Needless to say our truck drivers discourage this in the future.

The hillside combine was developed and tested on the test track and Oregon hillsides. Lab rigs were set up to endurance test the electro-hydraulic leveling wheel drives, pivoting header attachment and rear pivoting axle. Eventually Massey built some of these hillside combines off line.

All during the 70s and 80s, Toronto Engineering was trying novel ideas. We were intensely developing the Cascade Shaker Shoe thanks to Ben Grant's experience and inventiveness. Ben had intensely dissatisfied with the 510 combine in their heavy yielding wheat. Bob Leininger took the brunt of their dissatisfaction and he and Vern Macklin with other field test and Bob Ashton brought us into firm membership in Alma and Ben's family. He had modified the sieve arrangement by shortening the top sieve to provide a second cascade. This

concept was refined by Bob Ashton and Jack Winslow through field and harvesting lab rig testing to produce the cascade shoe as released.

The lack of capacity situation stemmed from perhaps overselling of the M-F 410 combine, which had the identical threshing dimensions of the older M-F 92 series (except for no front beater) The 45in cylinder of the M-F 510 with turbocharged diesel engine increased size and power to justify it's price relative to increased throughput. Wider headers helped to give the driver easier, less frenzied control, reducing operator stress and better control, but heavier yield through crop improvement and irrigation put pressures for more capacity to justify the rising cost. The M-F 300 combine (with cylinder at 30in only 7in narrower) had been undersold and proved to be well received. Ben Grant, ever the harvesting knowledgeable inventor produced many variations, including a quick drop concave to prevent cylinder clogging. Held in place by hydraulic cylinders, it dropped the concave down to pass a crop clod, when elevator chain sensed an oversized wad that might clog the cylinder. We were so impressed that in later years I gave Ben an old M-F 750 prototype to experiment on, which he has to this day. (Alma at 91 sadly passed a few weeks ago but Ben solders on).

We tested the spring wire cylinder in edible beans –Pinto, Red Beans, Chick Peas, etc. Normally peas and beans can be successfully harvested by slowing the cylinder using special sprockets and now with the two speed cylinder drive gearbox, but with some seeds that are easily cracked this cylinder option was made available.

When headers increased straw spreaders required improvement to increase spread wide. Additionally straw chopper performance needed improvement. Hesston our chopper supplier made these improvements. Massey was building straw choppers for Europe at the Eschwege factory in Germany. All these performances were evaluated both in the threshing lab and the field. The German built chopper was liked for its fine chop and wide spread but never sold here. Lab evaluation of both width and evenness of spread were both important with wider headers and the move to "no-till ".

The German branch of M-F about this time wanted a "35" size prototype tested in N. America. We arranged that it be part of our crew in Phoenix and other locations. They provided a most intense mechanic to accompany it. He and our crew had a fine time both learning a lot.

TRYING SOMETHING DIFFERENT

If you don't try it you may never know, as we found out when we tried a two engine idea. Combine systems operate at a constant governed speed throughout operation to provide optimum speed for the threshing /separation components. A tractor normally varies ground speed with gearbox and engine rpm (hydrostatic drives also do this) but need constant speed PTO drive for balers and particularly for PT combines (this is why engines were used on PTs in the past). Combines vary their ground speed by traction belts and hydraulically variable diameter pulleys. Later hydrostatic ground drives have been available. Why not use one variable speed engine for ground drive and another constant speed engine for the mechanism? We rebuilt an old prototype and found out. It didn't work!! There are times when you need full

traditional power for traction drive (achieved by even at extremes with normal combines, to shut off the mechanism to get out of a muddy hole). Other times full mechanism power is needed to pass a heavy crop bunch. You slow down even stop to digest “a slug”. Having only half power for these extremes just doesn’t work.

700 SERIES COMBINES EVALUATION CONTINUES

Ergonomics of the operator’s station was given prime consideration on this new design. It featured a new steering column, seating, electric over hydraulic controls with integrated header lift in the ground speed lever. Cab enhancement was critical.

The paddle header elevator was questionable from the beginning. It was well liked for its simplicity. Problems centered on rubber paddle life, through cracking and wear-out and wrapping of paddles and bearings and shaft bearings life. Western Canada was particularly critical, demanding a return to the conventional chain and slat. This was eventually provided as an option much to my satisfaction. Usage in corn was thought to be superior. I note that the paddles generally threshed more grain during conveyance and have long thought that putting this threshed grain through the cylinder was a waste and had tried a screen in the elevator to redirect it. Grain from here and the front of the concave is close to “grain tank ready”. It is a shame to mix it again on the grain pan whereas an auxiliary axial flow fan chaffing could complete cleaning of the larger size grains without overloading the shaker shoe. The most senseless method, in my opinion, is to remix this material as John Deere does with its auger conveyors from the walkers.

Combines traditionally use independent front wheel brakes for steering add. A latch is provided to connect brakes together for equal braking for road travel and to hold the combine stopped. A brake equalizer valve was added to master cylinder circuit to apply equal braking during emergency stop. Initially it “hammered” back noisily at your foot just the way my old 2001 Buick does today. Bob Dougherty worked tirelessly and improved this. It was interesting to see GM with the same problem.

A major data acquisition/load analysis instrumented M-F 750combine was run in Northern Germany by Messrs Scholich and Girodat in the early 80s.

Geof Cooper went to Japan with an M-F 750, in rice followed a few years later on two occasions by Arnot Neals when the combines were in full production. The delivered quality of these machines to Japan was atrocious and required much work by Arnot to bring them even to an acceptable level. It was only dedicated people service like Arnot that prevented catastrophes like this from having even greater consequences.

While testing with the Jones (Les and sons Doug and Ron) in cereals and small seeds, peas and beans for Asgrow the seed company field people were working besides a potato harvesting operation. It seemed a good idea to acquire some potatoes. Sure! No problem! They pulled the pickup under the shut-off unloader elevator which was full during the turning cycle. The operator switched the unloader on and the pickup squatted full to overflowing. We had potatoes at the track for months as they came home on the straw walkers.

A substantial amount of testing had been done out of the S. Indiana Junker Brothers dealership. We worked primarily with Downen Brothers of Shawnee town/Ridgeway Illinois. Five brothers (Ed, Bob, Don, Bill and Andy with their father Emmet “The General”) had cleared about 5000 acres on the Wabash River flood plain and Don was farming that plus a few more acres in cereals, soybeans corn and popcorn. The brothers had a trucking service for popcorn out of Ridgeway (Bob and Bill) and coal mines in Kentucky. Donny affectionately known as “cowboy” now manages the farming which allowed his father to get into oil well drilling then gold mining/casino development in Cripple Creek Colorado. This was an ideal situation with great cooperation, no end to crop, no haulage stoppage and tons of fun. We lived in the Holiday Inn in Muddy Illinois just outside of Harrisburg.

CONTINUING TO TEST THE 700 SERIES WHILE TESTING OTHER THINGS

We evaluated M-F Germany made hydraulic cylinders in field and to release. SKF was our traditional ball bearing supplier and Timken for tapered bearings. NTN, a lower cost Japanese supplier was entering the local market and we ran full lab life and dust box tests including field use. We started by only trying them in places we knew to be lightly loaded but with gained confidence we found them to be equivalent.

The M-F 405 PT combine was prototyped tested and released to production. By the late 70s, the M-F 410/510combines needed refurbishing and were changed to match the 700 series look and became the 540/550 series. The Perkins V-8 “540” engine was designed into M-F 760/860 and produced as we moved into the 850/860 series of basically paint and decal changes for appearance change.

Straw walkers (M-F open bottom with walker pan) were built at King St. The walker mats were made on a single machine that in a series of steps pierced and formed the mat from a roll of galvanized steel. It had been designed and built in the Massey tool workshop. The front of the walker had been changed to heavy gauge frog mouth for corn damage protection, but suddenly we began having customer failures at the cutout for the front crank. Rig testing in the lab confirmed this, though we had never experienced prototype failure. Mr. Hart, M-F welding specialist was called in. The number of spot welds was confirmed to drawing, but when compared to walkers built in the engineering shop and earlier production, welds, made with manual held gun were random, whereas a skilled shop and the original production welders had placed the welds precisely to be most effective. Drawings were changed to precisely locate the welds, increasing the number, thus correcting the problem and confirmed by lab tests.

Mr. Hart known throughout Massey as “Mr. Hart’ but tolerated ”Erwin” from his friends Reg Weaving and Ed Nugent (metallurgic lab factory expert). My memory brings a problem trip with Mr. Hart and Reg Weaving to Long Radiator in Detroit. The day was spent correcting the problem, touring the plant and dining with their representatives. Returning to our hotel lobby Reg and I drifted from the trio to the bar. Mr. Hart according to tradition suggested that we would be better to retire to our rooms to read technical manuals, as I’m sure he did. I, with everyone else had the greatest respect for Mr. Hart and his technical ability.

The need for maximum early grain removal from the stream seemed to be a possibility despite improvements with the introduction of the Cascade Shoe. Many concepts of grain removal in the threshing lab and field, directly on the header elevator, stone trap, rear beater grate, and concave were tried, as grain from these is almost grain tank ready. The rear beater grate was tried as a concave extension. An axial flow fan blast was applied as kernels dropped to the front of the grain pan in lieu of grain pan screens. An axial flow fan gives even flow across the width, whereas our conventional blade fans, with entry from the ends, flow more air on the outsides than the center of the sieve. Dave Rumble did elaborate air flow grids on sieves using a rheostat type rotor to electronically change rapidly across and up and down the sieve openings, to read the individual opening. (Air flow was measured with heat sensitive thermocouples which changed resistance with variation in air flow). Oh! For today's computer age!

STRIPPER HEADER

A 16ft Sunshine stripper header (made by H.V. MacKay in Australia) was quick attached at the test track and field tested in U.S.A. The concept of the stripper (used from the 30's in Australia) was to process only the ears (kernel head) of wheat, leaving the plant rooted (as in harvesting maize). This reduced combine power load, particularly cylinder and straw walker load (hence their loss).The cutterbar had extended 12in long, pointed but flat, fingers spaced 1/8 – ¼'' apart, full width along the header. The wheat stalk thus guided into the slots, as combine moved forward, and was pulled down (still growing in the ground) until only the head is above the fingers when it reached the knife. A serrated auger above the knife forced the wheat head over the knife then, feed it to the header center and up a vertical chain and slat elevator to the cylinder. Special 3ft. long pivoting crop lifters (at 12-18" spacing) could be fitted for down crop. The header enabled much faster speeds as combine processed only a fraction of the crop and worked extremely well in the low yield (dry-land) crops on level terrain as in Australia. It was even adapted for Milo Maize (Sorghum, Millet) and sunflowers in Australia. As noted elsewhere some stripper combines had been imported to N. America in the 40s. Custom cutter Max Louder I believe used a stripper header on an I.H.C. rotary combine in his record one day wheat harvest in Oregon during the 1990s.

SWEET CORN HARVESTER

The M-F Sweet Corn harvester was developed and produced in the mid 70s. It was tested with the designer Ed Happy in winter on an island in Lake Okeechobee in Florida where sweet corn is grown in the lake because if they get a few degrees of frost at Belle Glade or Clewiston, in the Lake it can stay frost free. We also tested near Batavia N. Y. and Leamington Ontario. Overall mechanical function and durability proved successful through using mostly combine and corn head components. Some units were produced and used with satisfaction in the kernel corn canning industry. The problem was the traditional corn head snapping action burst the lower kernels on the ear. These tend to ferment on route to market – up to five days Florida to New York, and are unacceptable to the housewife. Corn heads remove the ear by drawing the stalk down rapidly onto the snapping plates which snaps off the ear by striking the

butt end. Sweet Corn however is picked as we would, by pulling the ear downwards and snapping it off. Of interest I learned while living in Africa that Baboons seeing and following human practice use this method then put the ear in their arm pit following human practice. However when putting the next ear under their arm they drop the first ear thus leaving a trail of dropped ears along the row. Corn for local consumption can be picked and supplied to grocery stores in bulk without perceptible damage and the fast turn around enables cannery use. There is however a very limited total market for Sweet Corn Harvesters and only the large operations can afford them so the market was limited. Vern Macklin participated in a country- wide demonstration program trucking a unit by field test truck around for a mouth.

MORE TESTING

The 700 series development continued highlighted by mechanical, not performance difficulties, radiator rotary screen, paddle elevator paddle durability, transmission gearbox, alternators, some drive belts and other items. Corrections were tackled using lab test rigs as well as track and field work. As an example we couldn't keep alternators running. They would fill with dust and stop functioning. The electronics modual would burn out. We could duplicate the condition in short order in the dust box. Both Motorola and Delco alternators were tried. The Delco representative looked at dust box failed samples and remarked that these were exactly the same conditions they were seeing from John Deere field failures. They had no idea that alternators (which replaced generators in the 70s) could operate under these conditions.

The 410/510 transmission had come from earlier designs and a totally new larger gearbox was designed primarily by Dick Gerricks. A test rig was set up on the engine lab slab complete with dynamometer. This ran of a number of years as the new transmission developed though track and field to production.

A "740" prototype based on a 40in. cylinder was test ready for production soon after this but delayed. That prototype was eventually bought by Bob Dougherty for his week-end farming operation. Bob was a brilliant dedicated employee specializing in hydraulic systems. He like Dave Rumble could not work without getting deep down to the nitty- gritty. Bob would get cover in oil, which Field Test really appreciated and once presented him with the "oil can" award (reward)). After Massey he successfully engineered for the Toronto Transport Commission (subway, streetcar and bus) until retirement. Eventually Dick Gerricks was persuaded to join Bob and they must have been an awesome design team.

M-F 760 COMBINE CUSTOMER EVALUATION

It was decided to build ten M-F 760 combines as a factory pre-run and put them with established customers who would maximize their use in this preproduction year. Field Test monitored and reported on these machines throughout the year, did some of the maintenance, coordinated changes conducted interviews etc. This proved most successful in pointing out shortcomings. Operators in Western Canada continued to request a chain/slat elevator and narrow wire concave option (Massey had changed to wide wire spacing earlier rather than to remove ever other wire when moving from grain to corn to be more effective).We had tried

Motorola alternators, but released Delco for production. Although just about every problem we came to know showed up, some were judged still not significant and were left to plague us in the future.

When first in production we soon began to experience failure of front wheel rims. Mr. Hart was called in and quickly diagnosed “poor spot welding”. The supplier was a local Scarboro source, from a factory south of Steeles Ave., east of Markham road (Hwy 48). Being close to the track they worked night and day to provide new test specimens for us to track test and confirm the correction. The problem was quickly solved. It is of interest that Jim Carrey (the comedy actor’s father would have been their night watchman at this time) lived in a stone house on the factory grounds about this time.

RUSSIA

My personal involvement during this 70s period included a trip with an M-F 760 combine to Russia with Ray Hillock and Joe Batiuk. Arriving on a delayed flight near midnight in Moscow, the appointed representative (watchdog) had given up, so we taxied into the city. Driver technique in Russia was new to us that dark night. He drove up the hills with lights out, then the shut the engine off on the downhill, to save fuel, and coast downhill. Meeting other traffic without lights, made us wander if the savings associated with this dangerous nightmare was worthwhile and anticipating a crash any minute. First stop we thought best was the Canadian Embassy where were met by the night watchman, who agreed to shelter us if all else failed. The taxi driver took us to a dark corner of the dark city where a door with a barred slot in it opened and an old woman’s face appeared. We passed our passports through on request wandering if we would ever see them again. The slot slammed shut. After some time the door opened and we bedded down. Next morning our ministry minder found us and transferred us to the “posh” Rosetta Hotel near the renowned Russian Orthodox spiraled church and Lenin’s Tomb in the square. A couple of days later after site-seeing we flew to Krasnodar, then by our provided van ,with appointed minder, to Armavir where we were to live. Each morning we were taken from our hotel to the collective farm by a long circular route (to avoid a local airdrome where it was reported that North Vietamsse pilots were being trained.

The farm “director” introduced us to our 760 which we assembled while female “engineers” did time studies on our assembly work. You can be sure that Joe and Ray made the study useless, as they confused the Engineers. Field work was traditional but loss testing was antiquated using the old N.I.A.E. long tarp system. This was useless as combines were run side by side and caught immediately on startup never being allowed to fill up and reach an equilibrium condition. Further it was then run to empty before the next startup and catch. The setup was disastrous for the 760 which when running near empty when set up for normal operation, pours the grain out the back. The 760 didn’t have a chance! We wandered how designing to might these loss test demands would affect their true field performance.

We were allowed to phone to Toronto as long as we used the special green telephone at the farm executive offices. There wasn’t much hope of getting through until by using our minder it was instantaneous. I took roll upon roll of film. The director “offered” to have my film

developed. Eventually I got them back before I left, incorrectly developed giving them all a deep blue haze, together with a three mini-bottle vodka gift. These like a regular bottle I took back to our field test operation at Chateauroux France where it remained undrinkable despite F.T.'s reputation for consumption. The three bottles tasted like kerosene.

Vodka did have a good use. Ray and Joe moved to Moscow with the combine to an agricultural machinery exhibition. No local cooperation was possible until bottles of vodka, acquired in the hard currency store, were used to for now instant service from fork lift operators etc. Another use for the vodka was to shine the sheet metal and tires. While in Russia we never found beer that didn't taste as though it had been brewed that morning. The only thing drinkable was "champagne" which flowed on weekends at our hotel at weddings, to which we, as novelties, where often invited.

Field test had a "beer reputation" for which Garth upheld it best. While in China, the ever obliging Chinese noted that he enjoyed their beer in the evening but didn't much care for milk at breakfast. This was solved with beer with breakfast. Garth said there never was any bad beer only some was better than others. While in Pasco Washington, at the motel we traditionally stayed, we used Garth's room to unwind after the field. You can imagine twelve guys fresh from the dust, mud and straw from the field, lounging around over not just one beer. The waste paper basket and empty boxes overflowed with cans. One afternoon the motherly maid found Garth there and gave him the motherly advice, that he had the dirtiest room she had ever cleaned and that further, "young man if you don't stop drinking you are going to have sclerosis of the liver".

Joe, through his Ukrainian family could speak and understand a little Russian. His father worried about him as from experience didn't trust the Russians. When returning from a period of R&R in Helsinki Ray passed customs, but Joe opened his suitcase when asked to do so. The inspector asked "you speak Russian?" Joe continues to swear that after stripping, every cavity was inspected before he was released.

Taxis were impossible to flag down in Moscow. They learned that the most successful method was just to flag down a driver in the street, wave some American dollars and they were happily driven to their destination for the hard currency "donation".

OTHER FIELD PERSONNEL

A trip was made to Cape Town, then to Australia, with Bob Leininger where we were testing an M-F 750 combine in the mid 70s. Bob Leininger was an exception with Toronto field test. He came with AN Indiana farm background and many years with Massey service work. Like Ben Grant and Vern Macklin he had served W.W.2 in the air force – Bob in bomber maintenance in the Australian Coral Sea adventure then island hopping north toward Japan. Karl Langhorst, one time when the four of them had been together in Pasco remarked that things would have been different if they had won, to which Vern quickly replied that they were glad to have done all they could to prevent that. Bob had just finished a trail evaluation of the Badger-Northland hay wafer prototype when he first came to field test. The machine was never produced and was plagued with hydraulic problems when Bob was with it. Hay wafering was

one attempt of many farm equipment makers to get away from labour intense hay baling. They saw the small ejection formed alfalfa pellets and thought a conveyable compressed wafer (2" cube) might be the answer. This unit used a high power demanding extruder (2 ½" diameter) which broke wafers off about ½" -1" thick). Waffering did not prove successful and gave sequentially to SP loaders, stackers, (New Holland), transportable hay stacks, large balers 4x4x6ft - Hesston and round balers (Vermeer).

One time Bob and I were moving from Idaho to Howards in Minnesota. When crossing South Dakota a tremendous storm followed us and we were terrified if we stopped to bring our luggage out of the back, we would be drenched, so we kept on trucking. The wind was hurricane force and as we drove along on the raised highway we could see the wind whip apart the hay stacks in a swirl of hay leaving nothing behind. We reached Fargo safely. Next morning we were a little lost when down the road in front of us came this big truck with a combine. It was Bob Little, also lost and who we had agreed to met ten minutes from then, before he left Toronto. Howards was just down the road. It is quite remarkable that these type meetings always seem to come about as arranged.

Bob's position was one of roving field test assistant (Brock Townsend had this type position in the early 50s) but remaining on the M-F, U. S. Payroll. Other Americans, like Tom Falk worked for the Canadian Company. Tom later became Texas service manager for Kubota out of Dallas/Fort Worth.

SOUTH AFRICA TRIP

While testing in The Cape, we worked with Massey-Ferguson Rep. John Ness (later to come to Canada for a number of years to work in field test). While in the Cape Province, three brothers, who were extremely large production farmers (reputed to produce 80% of the small grain in Zimbabwe) came to stay with us. They (Clive, Pierce, and Vernon Nicolle) went with us to the field for each of three days and talked combines into the late hours every night. In later years they visited us in N.America, and sent their sons and relatives to work for our customers and to universities for experience. They naturally used M-F and learned irrigation techniques from our friends like Gigots of Garden City Kansas. Short years later, their cousin Dave Nicolle (a licensed aircraft mechanic) contacted me to immigrate to Canada. This was fraught with difficulty for Zimbabwe had no Canadian representation. There was a sub-embassy in Pretoria, but the closest embassy was Rome. Despite having a job offer with us, he gave up, travel to England and went to the London Embassy where Allan Neal arranged the required papers. I have been happy to mentor Dave ever since, through field test, combine plant production line supervision, then his move to Toyota's Canadian Cambridge startup ,to retirement in 2010 from managing the supplier parts and general quality control.

The Nicolle's "lost" their farms, houses and everything else, including their livelihood to the Mugabe regime in 1990s and after 100 years of Nicolles in Southern Rhodesia, they were forced to relocate (Pierce to S. Africa, Vernon and family to Perth Australia and Clive's family to Brisbane – all to establish many productive businesses for the Australian economy).

AUSTRALIA AND ELSEWHERE

Getting back, Bob and I moved on to Perth where Bob was very nervous. A previous trip had resulted in his boots being disinfected with formaldehyde for foot and mouth disease at Australian customs. It is well known how Americans cherish their cowboy boots and Bob was severely indignant that they would molest “His Boots”. Sure enough, his, not mine got the treatment. We proceeded from Sydney to the Darling Downs west of Brisbane. This was a highly productive irrigated region for returning military in the 40s, only after the impenetrable Prickly Pear was eliminated by Lady Bug beetles introduced for its control.

Other trips, in the 70s and80s included Porta Alegre Brazil, to M-F’s combine plant and M-F 750 combine field evaluation. Later Raymondo Castro and George Thrasher worked closely in Brazil for a period. I made a trip to Rosario Argentina when the Massey plant was building a variant of the Minneapolis Moline Large tractor with M-F designation (as sold also in N. America as an interim large tractor before the long awaited 2000 series of Detroit design was available). The plant had previously built the model #55.

ZIMBABWE

When rotary combines were first promoted (by I.H.C. and White), I made a lecture tour of Zimbabwe for the local M-F distributor at, breakfast, lunch, dinner and evening discussion lectures to customers, sales and service people . To meet the two week demanding schedule, we flew mostly by small private planes. It was during these flights that I realized how important contour ridging by pioneer European farmers was in preventing soil erosion.

EUROPE

During the early 700 series introduction we ran test programs on the reclaimed polders of the Zuider Zee in Netherlands, Lichtenberg (north of Hamburg) and Frankfurt (corn) in Germany, Verona (in rice) and in grain in southern Italy (with Italian speaking Carman), Israel (Mike Kroll in attendance), and in many locations in England and Scotland. We tested in France near Chateauroux (grains and canola) and Bordeaux (corn). I was involved with Roger Jessup, field test manager U.K., in exhibiting the M-F 750 combine at the tractor introduction extravagantia at Vitessa France. This was the first introduction of the superbly designed M-F 500&800 series Tractors (500 series to be built in Coventry, the 800series in Beauvais (we toured the plant a few days later). At last “Massey” had a modern product/customer emphasized tractor capable of meeting competition worldwide.

ADVANCE ENGINEERING GROUP AND OTHER DETROIT INVOLVMENT

An “Advanced Engineering” group, headed by Dr. Alex Marks, was set up out of Detroit in the late 80s. Much of their experimental work was done in the Milliken Harvesting lab and field testing with us in Phoenix using Adv. Eng. personnel. A section of this group included Toronto electronics division headed by Joe Girodat. An automatic feed rate control system

christened “The Maximizer” was developed and tested. Joe tells me that he still has a number of these units in his barn in Oakville.

Field test had an ongoing relationship with Detroit Engineering. Messrs Klemm and Elfes were headquartered out of Southfield Road and later both Chief Engineers Messrs Dewsberry and Doll came from Detroit Engineering. At one juncture amalgamation was tried with Phil Rich adding Toronto to his test jurisdiction. Jerry Mortenson was his field test engineer. The closure of Akron Ohio Industrial Equipment engineering facilities occurred during this time. Phil needed Toronto field test personnel and trucks to haul between Akron and Tecumseh Michigan. Stu Allan went to “supervise” our people at Tecumseh. They were re-erecting a metal clad building when lunch time arrived. Stu, ever cautious, recommended that the single upright wall should be braced. Sure enough, without it the wall was down when they returned.

One outstanding memory from that period involved Corby, of manure spreader fame, who was adventuring into composting. Toronto, on Corporate’s request had provided an SP swather to be used to transfer rotting compost from row to another laid out on a concrete pad to compost. Detroit test had lent a large industrial loader. Detroit and Toronto (Art Dewsberry) had visited and between wining and dining had been shown movies of the operation but never gone out to see it despite continued requests. Phil thought it was about time to get his loader back, so sent his manager down to claim it. When he came back he asked Phil.”Has anyone seen the operation?” Of course the answer was “no!” “Well they should, as all that is there is lines of garbage and does it stink!!”

When Detroit closed down and after Bob Doll et al moved to Toronto, tractor field test locations were put under my wing. This was not a big chore as Don Painter and Paul Hunt were long time Massey employees who ran everything. Detroit had had permanent test facilities at Thomasville Georgia, San Antonio Texas and Phoenix Arizona. Phoenix had run out a shop at Boswells farm N-W of the city but when Dell West developed Sun City in the 70s, operation moved to a shop south of Gilbert. This ran with 4-5 men until closed. I helped close the San Antonio site in early 90s.Don I think went to Perkins.

TRACTOR TESTING

We had operated and evaluated many of the model 1100 series tractors but never the 2000 series. Those we had seen operating by field test personnel for relatively short periods (the customer operator system we used didn’t seem to be being used).The tractors sure looked good to us.

We did test a prototype M-F 4000 series tractor PTO intensively in Salina California. This was conveniently near Bob Leininger’s home in Fresno. It was used with an eight foot rotor-tiller, which is a devastating PTO load, successfully on a broccoli growing farm. They grew 1000 acres of broccoli continuously planting another acre each time one was harvested. The tractor/rotor-tiller prepared the land again for planting. The M-F 4000 tractor series was a decided success.

Most of Toronto test and design personnel had a beneficial agricultural relationship. I remember hearing that through A.S.A.E., some young M-F Detroit engineers visited John Deere engineering and were somewhat amused to hear that these J.D “farm boy” engineers were allowed to take prototype tractors to work on home farms, their uncles etc. Perhaps this had something to do with Deere’s success over the failed 2000 series.

I also remember being invited with Art Dewsberry to Corporate Head Office quarterly report by Victor Rice. He came in and casually sat on a desk, a black female employee strategically sitting on the other end of the desk. After considerable preamble, employee participation was solicited. Arnot Neals, a very very dedicated long time service department employee (so longtime that he remembered my Dad in western Canada) got up and tried to heap praise on the superior performance of the M-F 4000 series four wheel drive articulated tractors in Western Canada The subject rapidly changed when Mr. Rice asked V.P.Bager how his “barter trading” was going with China. He was assured everything was on schedule to bring in Chinese made bicycles. All that remained was to have the paint changed from black and have a multi-speed gear system designed to meet N.America current customer expectations.

After a 70s trip in north Germany I was impressed how appropriate tractor front wheel drive preformed. I wrote my opinion, and was pleased to see some M-F UK built units were sold but only in Canada. Massey failed to pursue this option while others made good. Despite it’s availability from M-F in Europe Massey didn’t make it available until the 80s.

OTHER TESTING

We had evaluated a 12 bottom semi-mounted mouldboard plow at this time. Earlier we had used the bayonet weight transfer system on the track but I don’t remember any details. The plow though was just three point hitch mounted.

We evaluated many potential sources of sub 20HP tractors from Japan, settling on a series range that was marketed. Tony Fox came from Detroit to Toronto to administrate these later in the 80s. Additionally we developed, through track and field testing, (including rig testing of mower belts) of U.S. sourced front end loaders and both mid mounted and three point link mowers. Tony Fox together with supplier engineer developed these products for Massey.

Alex Crawford came to Toronto with the baler project and did experimental work on a new concept baler by building parts and experimentation at the track. Alex had originally gone to Detroit from UK where he had been responsible for design of Massey’s fine baler knotter.

Bob Skrome (his brother also worked at New Holland I believe) came to Toronto from Detroit to manage what remained of the implements and haying equipment. Frank Herrick came to continue looking after forage equipment, eventually to take over after Bob Skrome departed. Ray Beebe came to manage tillage machines.

Several alternative concepts were considered by Toronto Engineering. The possibility of using a single power unit (like the Allis Chalmers combine/forage harvester) was drawn up and scale modeled. This was based on a base unit carrier for forage harvest, sweet corn, kernel/ear

corn, etc. with bulk handling. Other ideas proposed were the mounting of an hay conditioner at the combine header opening for hay conditioning into a windrow, mounting a snow plow blade or snow blower to the quick attach system to facilitate winter use for a piece of very expensive machinery sitting in the shed for ten to twelve months a year in Western Canada.

The advent of larger capacity combines stressed the grain hauling capacity in the field, which was in part met by larger grain buggies and on the road by larger trucks and double trailers. The tractor/field buggy combination required an additional driver and tractor and we thought that by taking the road tractor and trailer to the combine in the field was the preferable method. This works fine except when the fields are too wet for truck operation. Also trucks may have long waiting periods if crop is light. An idea to address this was tried. Garth adapted a fifth wheel dolly to air left fifth wheel. Using this behind a four wheel drive tractor an operator could pick up a parked road “18 wheel” trailer from the edge of the field, go to the combines and when full drop the trailer at field edge and pick up another trailer without leaving the tractor seat. This worked quite satisfactorily with Sam and Earle Wiggins operation in El Centro but never caught on. I have seen it in operation on occasion elsewhere though.

We had started working with the Wiggins in the 60s after he had purchased the custom harvesting business from Jack West. We had twenty years of tight relationship with Sam. As I type this, it reminds me of visiting Earle about eight years ago, when I saw the changes from mostly cereal grain to alfalfa hay production near Seeley California. The scope of the enterprise was emphasized by a new railway line from El Centro specifically to haul double stacked sea containers on drop-center rail cars especially to ship large size square bales of alfalfa hay to Japan via San Diego. Compete train loads were seen. I also remember Professor Walter Billanski recommending Ontario should grow alfalfa hay for Japan. I had problems with that as I knew they harvested eleven cuttings in the irrigated south and at the best three cuttings in Ontario. Further I knew how profusely legumes grew in New Zealand.

ROTARY COMBINES

T X 900 ROTARY COMBINES

Finally in the 80s Toronto Engineering embarked on a rotary combine program. This was managed through Walter Hirsch and Bill Helm (Bob Aston encouraged into early retirement). The TX903 and 904 prototypes were built and track tested by field test personnel at regular test locations primarily under the design engineer's direction. Loss tests were performed in Arizona. High throughputs at good losses resulted. Phil Vandenberg, who flew with me later from Pasco, encouraged me to relate his opinion from the loss tests he had organized. He felt, like me that rotaries got a lot of their impressive results from their increased engine power which could continue straight line loss, rather than the exponential loss which shoot up at heavy throughputs that slow down the whole mechanism, at much higher throughputs than conventional walker combines. At low throughputs the standard and rotaries had similar losses. This can be expected as they have the same shaker shoes, but at high feed rates higher power allowed the

rotary to continue, whereas conventional combines experienced exponential increase in losses. The rotary losses increased steadily at mostly less than 2%. The problem we thought was that no farmer wanted 2% crop loss. They expected less than ½ % wastage from the combine. This by all standards is a superb performance of 99.5% efficiency from any mechanism. Would that we could get that from our car engines? I had always thought that Massey in its then financial position, particularly having discontinued the 2000 series tractors and its huge toolage costs, would never have the money to tool a completely new rotary combine.

We had purchased and run both I.H.C. and White rotaries with us in the field with good success.

The transfer, elevator to rotor gave special concern. The I.H.C. rotor front blades tended to wear rapidly with use. The auger type front transfer on the White seemed best. Our prototype seemed to feed poorly often wrapping.

Another difficulty we had over the years was combine electrics. Like on our trucks, water, dust and corrosion was a continuing problem with the switch contacts, wiring and conductors. We never fully solved this but I note that today trucks and even John Deere seem to have worked diligently to solve the electrics problems. Perhaps this ability to solve difficult problems results in their clear dominance.

We kept pretty good tabs on our competition. Competitors testing in the field was photographed and videotaped. By 1983 we had a field file on John Deere's experimental units including their advancements in electronics and its obvious potential and leapfrogging of competition. We saw little rotary development work by Deere. Their progress was viewed by "test" to be stupendous but when we showed it to management we were discouraged by their lack of interest.

OTHER ROTARIES

We had tested and ran Allis Chalmers cross flow conical, New Holland twin rotor, I.H.C. and White Rotaries for two or so seasons. The I.H.C. and White I felt were satisfactory, some of there increased capacity coming from their oversized shaker shoes. We were particularly impressed when Bob Leininger saw an I.H.C. prototype operating without rotor "wrapping" in heavy rice north of San Francisco near Yuba City, for we had experienced severe wrapping problems in wet crops. This convinced me that a rotary was possible, especially having operated the White which was a simpler design. The White rotary combine had been the product of fine work by its Chief Engineer Wolfgang Scholich and developer Murray Mills. Massey's decision, after moving our engineering department to Brantford and field test to Hagersville, to use the White rotary, met my approval. It was a customer accepted unit known to us and already tooled. It made sense, and proved itself as it migrated though Linamir, Western Combines to Agco. Murray worked for us out of engineering Brantford in these later years.

THE MOVE TO BRANTFORD

I never moved the family to Brantford but commuted weekly or often daily while the Milliken Test track remained. We had offices in a now M-F owned building which previously housed White Engineering with field test later relocated at Hagersville for the final three years. I had encouraged long service employees who had adequate pensions, to retire rather than have the family disruption through a move to Brantford. Stu Allan, Carmen, Walter Riekman and others took this opportunity. A couple of years later I did the same in November 1987 (with outstanding vacation etc. it extended to February 1988), with the approval of Bob Doll. He wrote a most flattering farewell note approving my years of dedication to the needs of M-F products and customers. Bob was unable to attend Carmen/my retirement get-together.

MY MANAGEMENT PHILOSOPHY

My first loyalty was always to the Massey employees who worked with and for me. After that my greatest concern was for our products performance to the satisfaction of our customers.

Something can be said here about my personal management philosophy. I am very much “hands –on” taking my turn when time permitted on the test track, at the test track, in the harvesting lab and downtown labs and particularly the field testing. I would fill in where needed for missing personnel during field staff changes, augmenting “the field” and participated (not with enthusiasm but dedication) in loss testing. Should vehicles etc. need to be moved and we were short of personnel, I’d do the job. I maintained my commercial truck driver’s license and trucked oversize loads only when we were desperate and real truck drivers were not available.

Further to my management model, I found the personnel department (now “politically correct”-Human Resources) was too, too formal for me. I succumbed to “job reviews” and their paperwork, but this was not personal enough for me. Most of our job interviews were very informal but personal chats in a pickup, on some journey. I was truly open to listening anytime anywhere, changing plans to accommodate needs of each employee and particularly their family needs were foremost and superseded those of Massey.

Everyone aided the testing. For example, Allan Neal, in the 80s, while at Corporate, took a turn in France with an M-F 750 combine. Unfortunately, in the first few days the operator turned short quickly and ran over Allan’s leg. A broken foot didn’t stop Allan from completing his term. About this time due to circumstances I spent a month alone with a combine test near Corby England (near the abandoned coal pits). A “couple” of weekends were spent at my old haunts near Warrick where I was housed in an old farm house estate owned by Massey and used by executives as required.

TRACTION BELTS

Traction belts, which enabled variable ground speed while maintaining constant engine speed for the mechanism, have always had questionable life. Despite consciences design and materials improvements through much testing and development, we were never satisfied. The hydrostatic drive system was successful by providing customer drive satisfaction despite safely

limiting power transmission when excessive power is applied to the ground drive. Our traction belt drives consisted of two belts. The upper belt, driven off the engine output shaft by a fixed diameter pulley, to double variable diameter pulleys, then by a second belt to a fixed diameter pulley with integral plate clutch on the transmission. The intermediate pulleys were mounted on a hydraulically moved arm. As the arm swung the pulleys upward, the lower belt pulled down on the intermediate pulleys pushing the center sheave away making one side pulley smaller, the other side larger diameter, thereby slowing the transmission drive. By moving the arm down, the center sheave movement reversed this procedure speeding the drive (driven pulley smaller, secondary driving pulley larger diameter). Tension on the belts was maintained by a spring loading of the double center-sheave configuration. A ratchet device had been added to compensate for belt stretch to maintain tension and stop tension backing off against the center sheaves drive tensioning spring, when belts were under load, and thus prevented slippage, which would burn out the belts. This helped greatly but still “no cigar”. Carman Cariglia, ever thinking, tried a second ratchet mounted beside the other to make a further half step in adjustment in preventing load backed off the tension device. This showed good improvement and at little cost and with parts readily on hand it could have been immediately implemented at the factory level. We felt that “in days gone by”, the Chief Engineer, within hours would be on the assembly line implementing the change.

FAMILY INVOLV EMENT

This narrative would not be complete without mention of my own family’s M-F involvement during these testing years. And they were “testing years” for I would be away from home and our young family, for over twenty weeks each year. The first family trip was in 1971 when we needed a pickup driven to Phoenix. Normally I drive twelve hour days, so Mark age 4 would tire and simply lie down under Shirley’s feet and sleep. No seat belts then! It was too hot for Michael to come to the field except for one short visit. The pool at the Royal Motel in Tempe suited the boys better. Later, Shirley and boys continued on by bus (Would you believe it!) up the west coast (with a stop at Bennie Leininger’s) to her uncle’s in Victoria British Columbia. Next trip was to Salem Oregon (Michael being on tour in Europe with his teacher). We needed a pickup moved to Pasco, so Shirley agreed to move it complete with heavy sundries box sticking out over the rear tailgate. Mark,(age 7) acted as navigator, until on the hillside, road curves were so sharp that the projecting sundry box seemed to nearly hit the hillside on sharp curves. On questioning, Mark informed the frustrated Shirley that he was directing via “the scenic route” rather than the highway along the south side of the Columbia River. Arriving in Pasco, the next day they were to fly home very early morning. Dave Link had to dress a sleepy Mark and Gus Norton helped them, then to Pasco Airport and left. Shirley tried to buy the air ticket but they wouldn’t accept Visa. Without the cash Shirley was in panic until the agent saw her Sears’s credit card and accepted that. A long flight, change stop in Chicago, got them home in the very late hours that night. When asked wouldn’t you know, Mark said “that was the best day of my life” to Shirley’s exasperation.

Shirley and Michael came to visit us when field testing on the Netherland’s Polders then on to England and Scotland. While at the hotel in Kampen Holland, Michael insisted on having

wooden shoes (we still have those blue shoes as flower holders). Shirley gave in, and when Art Dewsberry and Gilbert Delfosse, French Chief Engineer, came with us back from the field, you could hear the clopping at the hotel entrance of proud Michael. The hotel was justly proud of its French menu which we thought we could now handle with Gilbert's help. He ordered for us in perfect French but the Dutch waitress only stared at him, not understanding his perfect French. We resorted to Gus who had always been able to get our needs across before, so we ate well again.

Another time they joined with Bennie Leininger for a Rhine cruise Rotterdam to Strasbourg, then train to us at Lichtenberg north of Hamburg Germany. Bob Leininger, Karl Langhorst and others were there. Leaving the hotel Shirley and Bennie were pursued to the train station for not paying their hotel bill. Shirley and Bennie were "up to that trick" or scam, and indeed got to us only to learn that I hadn't prepaid. A phone call to Barbara at Sharps Travel Agency, Toronto, corrected that immediately. The train carriage had required a switch in Hamburg. Screams came from Mark as Michael dragged him off the departing carriage where Mark had needed a bathroom break, and was rescued by Shirley et al. A raging diatribe followed from the German train conductor at such neglectful parents, the words not being understood but the reprimand was unmistakable.

We were returning by our car from holidays in Florida one Christmas and as there were two pickups left at Donens in Shawnee Town, we called in to move them back to Toronto. Sure enough that night as we slept at the Holliday Inn in Muddy Illinois, a severe ice storm made the roads like glass. Shirley and the boys were persuaded to take a ride in their helicopter. She was much excited when the door flew open during flight over their lands in the Wabash River floodplain, and they had to land to reclose the door. It was Sunday afternoon, New Years Eve 1984 that we left to go to Bob and Bennie Leininger's north of Indianapolis. Michael (he had not had a license long) in our car in front, me in a pickup and Shirley and Mark, as navigator, in the rear pickup. We took a gravel road where stones poking through the ice gave us some grip. When Michael slid from side to side in front of me, that settled him, as from then he drove with good sense but still ate most of the sandwiches that Amy Donen had sent with us. We were starved when we got in late for Bennie's turkey dinner and the boys were soon fast asleep in front of the fireplace.

That same Mark actually worked for four months at M-F Corporate H.Q., in their computer department, when on a work term in 1995 for his mathematics/engineering degree from the University of Waterloo. Three generations of Gordons as employees of Massey-Harris-Ferguson over sixty years was our contributions to "Massey", and it didn't stop there!

AFTER THE DEMISE

BANKRUPTCY

Massey had become Varity when it was unable to use the venerable old Verity name and with V.A. Rice's presidency became VARity. All N. American factories, company stores and other assets except valuable real estate was transfer to the new Corporation C.H.E.C. under President Mike Potter. Bankruptcy occurred in 1988 of this portion of Massey, shortly after I had retired. We were surprised that Mr. Potter didn't return to a presidency in Varity.

Upon bankruptcy all M-F engineering records and photography were no doubt unfortunately destroyed and lost to future generations. The receiver and/or remaining Varity employees showed that they really didn't care. I felt, in my case that as Massey had paid for the film and developing, photos and thousands of slides were theirs and left with Engineering in Brantford. Likewise all summary reports etc. back to the 50s remained on file to be scrapped.

Bankruptcy also resulted in complete loss of benefits (medical, dental, eye glass, life insurance etc.) despite many Massey-Harris-Ferguson workers having worked for thirty or more years for these rights. As an example, my father (then deceased, but his continuing spousal benefits remained) retired in 1960 after 30 years employment lost benefits. He had never worked for the bankrupt C.H.E.C. or for the Canadian Company for the last 13 years work. This action by Varity disgusted me enough to write letters to the three Toronto newspapers on my 90 year old mother's behalf. Two weeks after publication mother received a letter from Varity. "There had been a mistake!" and in my opinion there certainly had been.

COURT CHALLENGE

A group of employees lead by Keith Byrnes and I, with others, met with Mark Ziegler of the law firm Corsky and Minsky and challenged Varity in Provincial Court. After much legal delay we received court action for restoration of all benefits except "out of country" medical insurance, all court and lawyer costs and all benefits since bankruptcy paid.

When bankruptcy was declared the pension fund was 4% under funded. We could not contest this as most workers were covered by the Ontario Pension Protection Plan up to $1000 per month and the challenge would be prohibitive for the few affected individuals. The Ontario Pension Fund turned the windup of Massey's pension fund to Price-Waterhouse. Three years later and $4 million costs later the fund was 17% underfunded and pensions lowered accordingly as they were converted to Standard Life annuities.

SINCE THE BANKRUPTCY

The tradition of parties from the days at the test track continues. The ”gang” in 2011 still have three “Massey Parties” each and ever year, February lunch at Whistlers bar on Broadview at Pottery road in T.O., an August barbecue at the Agricultural Museum in Milton and a November Christmas dinner at a golf course north of Milton. Milton is midway between Toronto and Brantford and therefore convenient for all, as all M-F and others are welcome. Bob Farris, Massey’s patent attorney, and Mary Ann almost always come up from Detroit. Others from afar include Ray Hillock, Joe Batiuk, Karl Klotzbach, Keith Byrnes and John Ness (before their passing) and spouses. These get togethers are attended by 50 odd ex employees and spouses and others. Originally the barbecues were held at our home then later at Stu Allan’s, Carman and Angie’s farm, then at Keith Byrnes, before settling at Milton. Thanks to Kerry English, Marilyn Henry, Dave Nicolle, George Thrasher, Ernie Smith and spouses and particularly our treasurer and chief cook, Dave Maw these enjoyable fantastic activities continue.

POST MASSEY ACTIVITIES

Although I have not lost interest in farm machinery, I have too many other interest in retirement, not the least are our grandchildren –Robbie age 21with Michael, and Sean (8) and Dana (6) with Vivien and Mark-all living locally. Positions with York Region Housing Authority, Heintzman House Community Center and chairing the York Region Unemployment Insurance Appeal Board, have kept me occupied.

Shirley and I have travelled a lot in the last fifteen years after disposing of our rental properties. I started with an adventure with Mark (Shirley and Michael didn’t want to go), for two weeks over 1988 New Year in The Galapagos followed by two weeks on a barge on the Amazon River near Iquitos where the Napa meets the Amazon. We had taken cruises to the Caribbean and the Eastern Mediterranean when the boys were young, before high school demands restricted absence from school. Knowing how travel had broadened our children’s minds, we thought we might enjoy taking grandson Robbie. We had fun on three cruises in the western Mediterranean, Dover to St Petersburg and Scandinavia, Caribbean, Miami to Santiago Chile via The Panama Canal, and 1000 miles up the Amazon to Manaus and return to Barbados. We also made a summer car trip to Newfoundland and the Maritimes with him. Robbie then went on to high school and no more trips that could interrupt studies. He is now apprenticing with his grandfather’s business and union in sheet metal/heating and air conditioning. This meant we have to travel on our own now. Since then we’ve been travelling as follows:-

3 cruises in the Caribbean – from Miami and Galveston

2 weeks cruise to the Canary Islands and Morocco from Southampton return

4 weeks cruise Seattle, Alaska Glaciers, Aleutian Islands, Petropavlovsk and Vladivostok in Russia, Japan, South Korea, Shanghai and Peking.

2 week bus tour of North and South Ireland

4 week cruise-Danube/Rhine rivers-Black sea to Amsterdam

4 week cruise- Bangkok, South China Sea, Darwin, Great Barrier Reef and Sydney

4 week cruise – Los Angeles, Mexico, around S. America Cape Horn, Falkland Islands, Montevideo, Buenos Aries and Rio de Janeiro.

We are currently booked for an 8 week cruise starting April 6, 2012 –Singapore, Bombay, Dubai, Cape Town, Western Africa and Southampton.

We have spent the winter months on Padre Island in the south westerly corner of Texas at the Mexican border. It is the same latitude as Key West Florida and we have spent January, February and part of March in a motel there in good warm weather for the last ten years.

We still live in the original home I designed and had built in 1966. It is far too big for us and too much yard but Shirley likes it in Thornhill close to the grandchildren. I would gladly move to our condo in Owen Sound which we've had for 15 years.

IN CLOSING

THANKS

I wish, in closing this narrative, to sincerely thank those many folks who have been so kind in providing me with the wonderful fulfilling life. They include my educators, Massey colleagues, the hundreds of field acquaintances and associates. And not the least, I must emphasize my gratitude to my understanding wife for putting up with me for 51 years of marriage. She has presented us with two outstanding sons, Michael the cabinet maker and Mark the computer geek, who now works for Dialogic [an Intel offshoot], who with his talented wife Vivien {a R.I.M. product manager], who in turn have given us their challenging offspring, Sean and Dana.

Thanks also to Shirley and others for proof reading, Mark for computer assistance, to Gary, Ray, Kerry and Dave for pestering me to take the time to jot down these few notes, and to Ray Bianchi for his post writing assistance.

It has been anthropology of reminiscences, a true pleasure and I thank you all.

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