FENA: the interest group of choice for North America’s Ferguson owners, collectors, restorers and enthusiasts.
Early September, Hillary left with 3 Ferguson tractors towing the caboose and four other sledges with food and fuel, carrying 6.5 tons on a full scale test of their winter’s work. They crossed McMurdo Sound and reached Butter Point. At Gneiss Point they left a large depot of supplies for the dog team that was to travel that way later in the year. The trip was 150 miles, and at one point for 10 miles, they were able to travel in high gear. The tractors were able to go 3 miles per a gallon of fuel on average. The surface for this trip was mostly hard, smooth sea ice and provided ideal traveling conditions. During this trip they found that when the temperatures reached below -20 Fahrenheit, adding half a pint of gas to the engine oil sump every night made the tractors easier to start in the morning. They figured that the gas would burn off during the next day’s hard work. With some modifications to the caboose, they felt they were well prepared for the trip south.

**DR FUCHS’ RECONNAISSANCE TRIP TO SOUTH ICE**

On October 8th, 1957, Dr Fuchs left Shackleton Base with a Sno-Cat and three Weasels on a reconnaissance trip to find a route to the South Ice. He had hoped it would take thirteen days; unfortunately it ended up taking thirty-seven. One and a half miles into the trip, one of the Weasels broke a roller guide for the track which jammed between the track and sprocket, bending the axle. This was temporarily repaired, and the Weasel returned to the base. Shortly after that, another Weasel started causing problems with the #2 piston’s connecting rod. They decided to short circuit the plug and keep going because repairing the engine would take three days, as they would have to remove the engine, and they were in the middle of nowhere with a...
-30 degree Fahrenheit temperature. Two U-bolts broke on the other Weasel, and the party had to spend the next day fixing the springs on it in -2 degree Fahrenheit weather.

But the main reason for the delays was crevasses under the snow bridges. For long periods of time they had to probe the snow with six foot poles every three feet. This involved pushing the pole all the way into the snow, and if resistance was felt all the way down it was considered safe. At one time, Dr Fuchs reported that the next 10 miles were going to make or break the expedition, for they may well loose vehicles over the ground ahead of him.

On Oct 30th, the Weasel with the bad engine stopped with a broken cam shaft drive and had to be abandoned. This left the party with one Sno-Cat and one Weasel, which were left at South Ice Base when they reached it. They would pick these up on their Trans-Antarctic trip. They flew back to Shackleton Base in 2 ½ hours, only to start the trip all over again in 9 days. The new date for departure was set for Nov 7th with three Sno-Cats, named, Rock & Roll, Able, and Country of Kent, two Weasels, Rumble, and Wrack & Roll, and the Muskeg tractor called Hopalong.

HILLARY’S TRACTOR PARTY HEADS SOUTH

On October 14th, 1957, Murry Ellis, Peter Mulgrew, Ron Balham, and Sir Edmund Hillary started their trip south with three Ferguson tractors and a Weasel. The American neighbors did not think that they would make 50 miles. The battered Ferguson tractors did not look like much to the casual observer. But Hillary’s party still felt that their reliability and ease of maintenance would make up for the tractor’s poor performance in soft snow.

Within the first 5 miles, one of the sledges fell into a crevasse, and they had to unload 12 44-gallon drums of fuel to get it out. The next day, the tractors became bogged down in the deeper snow, and in the first two hours they traveled only 1 mile. They decided to push off 8 drums (1 ½ tons), which ended up being enough to allow them to travel 25 more miles that day. Temperatures remained around -30 degrees Fahrenheit. The Weasel was developing mechanical problems, but they were 50 miles from Skeleton Depot and decided to keep going and see if they could fix it there. The first two Ferguson tractors were roped together in case one would fall into a crevasse. Every three hours the party would get so cold that they stopped and had hot cocoa and a meal in the caboose.

At Skeleton Depot, Jim Bates, one of the mechanics on Hillary’s party, was flown in to replace Ron Balham. Upon reaching the Skeleton Depot at the base of Skeleton Glacier, the Hillary party built a bipod out of the timbers that they brought for potential crevasse rescue operations and pulled the engine out of the Weasel. They found a broken driveshaft for the distributor. They also found a broken spring on the Weasel’s suspension that needed to be repaired. This took two days.

On October 31st, they reached the Polar Plateau known as Depot 270, which was 8,200 feet above sea level. They had traveled 290 miles. Hillary was quoted saying, “Our tractors had fulfilled all our hopes and had more than repaid the labors of the winter. I have rarely felt a greater sense of achievement.” (page 194 The Crossing of Antarctica)

The tractor party wanted to leave the depot with full loads of supplies behind the tractors. Gas, oil, and food for the men and dogs were flown in on the Beaver when weather permitted. Murray Ellis had a badly strained back after one of the
members of the dog team backed a tractor over him. Peter Mulgrew fell off the roof of the caboose and broke three ribs while attempting to fix the ventilation for the Primus stoves. Both were flown back to Scott Base and were able to return later at Depot 480 after they had recovered. Derek Wright, a photographer, and Ted Gawn, a radio operator, were flown in for replacements.

On November 11th, they left the depot pulling 11 tons of supplies. At an altitude of 10,000 feet and higher the 28 bhp tractor lost 30% of its power. Therefore the tractor’s engine was only able to produce 16 bhp at 2,000 rpm. To make up the difference, about an inch was cut out of the governor linkage, which allowed the rpms to be increased to 3,000 and brought the bhp near to normal. Because the snow was soft, the Weasel had to pull most of the load. After turning southeast the surface improved, and the party was able to travel 30 miles per day.

Hillary’s party reached an area suitable for Depot 480 where the Beaver could land on November 25th. They serviced their vehicles, made repairs to the sledges, and acted as a receiving party for the aerial lift of food, kerosene, and eleven 44-gallon drums of gas. The injured members of the team returned, and now the party had 6 members.

To help start in such cold temperatures, the tractors were equipped with KI-Gas equipment that was standard equipment on the Ferguson TEF diesel tractors. With the gas tractors going to the South Pole, they had ether injected into the intake manifold. It was decided that since the air was much cleaner, the air cleaners were removed, increasing the air flow to the carburetor. They ran short of antifreeze but resorted to using kerosene without any bad side effects.

On December 6th, they had the depot stocked for the Fuchs’ party and left with a full load. The Weasel began making a grating noise in the clutch and differential on the 8th. Bates and Ellis spent

Hillary & Fuch's Route Map. The ---- show the approx. location of Fuchs when Hillary reached the South Pole. 
Credit: Denver Post
hours working on it. They decided to lighten the load of the Weasel so they set up a Midway depot, leaving the Weasel to pull only the caboose. Soon a thrust bearing went out on the Weasel, and Bates built a new one out of brass. However, it did not last, and the Weasel had to be abandoned.

For the next 90 miles, they found that the snow was deep in the floor of the wide basins and caused the Ferguson party to struggle; yet the hard surfaces of the ridges were split with crevasses. The tractors had been roped together, not only for safety, but also to help pull the sledges. Usually, if one of the tractors hit a spot of hard going, the other two could pull it out. About 7 miles before reaching Depot 700, one of the tractors was almost lost in a crevasse, but the roll bar jammed against the crevasse’s wall and held the tractor up. They had to dig snow out in front of the tractor, place wood under the front to create a bridge, and attempt to pull it out with the two other tractors. One had a rope attached to the front of the tractor’s tow bar and the other had a rope attached to its front axle. Hillary had to either recover the fallen tractor or abandon the idea of traveling to the South Pole. It would not be wise to start the 500 mile journey from Depot 700 till Feb 7th, seven weeks later, and it proved to be unreasonable to expect him to wait. From Depot 700 there were still around 100 miles of crevasses that Fuchs had to travel though, so Hillary offered to mark the trail through them for Fuchs and head to the pole, some 500 miles away. He’d managed to obtain 20 drums of fuel for the trip. Ellis, Bates, Mullgrew, Wright, and Hillary left for the pole with the bare minimum of supplies on December 20th. For the next 60 miles they marked crevasses for the Fuchs party, sometimes falling into them as they went along. The snow was deep, and fuel was being consumed at an alarming rate. On December 30th, about 200 miles from the pole, the tractors were constantly getting bogged down in deep snow and had to be dug out with shovels. Hillary told Scott Base that “it appeared as if the tractor train had reached the end of its road.” (page 92 Opposite Poles)

At this point in desperation, they threw off 1 ½ tons of supplies, as much as they could spare of food, kerosene, tractor parts, fuel, and even the spare man sledge. They continued without any reserves. By January 2nd, 1958, they were 70 miles from the pole with 180 gallons of fuel. On the 3rd, they drove 24 hours straight to cover 60 miles. They stopped 10 miles short of the pole to rest.

On midday on the 4th of January, 1958, they arrived at the pole, with only enough fuel to travel another 15 miles. This is where Hillary’s military experience as a Royal New Zealand Air Force Navigator on a Catalina Flying Boat in the Pacific in 1944-45 paid off. His bubble sextant was becoming unreliable, and “the thought of wandering aimlessly around the middle of nowhere wasn’t very pleasant,” Hillary remarked later. (page 114 Hellbent For The Pole) “The fact that the trek of 1300 miles, and taking three months had been made by ordinary farm tractors that anybody could buy... in the worst weather in the world, the tractors had never given any serious
trouble” (Page 132 *The White Desert*) was particularly impressive. “The sledge meter had the wheel tied so it would not spin, thus keeping the exact mileage of their trip at 1361.3 from Scott Base to the geographical South Pole.” (Press release from the Sir Edmund Hillary Alpine Center @ the Hermitage & Aoraki Mount Cook Museum Trust) Still in dodging the crevasses they often ended up going over the same tracks that they made earlier. This is one of the reasons that the sledge meter showed many more miles than the 1250 nautical miles from Scott Base to the South Pole.

Some of the minor troubles with the tractors other than getting bogged down in the soft snow were the distributor points needing to be adjusted or changed every 50 miles or so, several starters breaking and needing to be replaced, and one of the tractors having several burnt valves -- this could have been due to the fact that the fuel mixture was adjusted too lean for the higher altitude. Hillary told the reporters “If you overhaul them, they would go right back again.” (Page 132 *The White Desert*) Later Hillary described the long haul as less stressful than climbing Everest for the first time. “But,” he added, “crossing the crevasses between Depot 700 and the Pole was more nerve wracking than Everest.” And when asked why he pressed on to the Pole he replied, “Because I wanted to. Some people have to have a scientific reason. Not me.” (Page 116 *Hellbent for the Pole*)

Arthur E. Jorgensen, a member of the winter crew at the South Pole, and present when Hillary arrived, noted, "He stopped at the outer perimeter of barrels encircling the pole and was asked to walk over to the flags at the pole for more pictures. His response was "come off it yank, I want a cup of coffee” and hastily made his way to our mess hall.

A Baseball game was staged during January. It was the southern most baseball game, if you want to call it that, ever played. Sastrugi, wind formed sculptures in the ice, marked the bases and the rules were kind of made up along the way. Ed Hillary was with us and even participated with one pitch ---- cricket style. I don’t think it lasted more than one inning. Try running bases wearing mukluks in temperatures well below zero. So I guess Antarctica won.”

It is worth noting that Sir Edmund Hillary was the only one that completed the trip; the others in his party for various reasons were not able to. Hillary’s party was only the third party to reach the pole by...
land, the last since Scott in 1912, and the first party
to reach the South Pole by vehicles. All the members
of the US base were flown in. The tractors remained
at the pole for several years as part of the US Deep
Freeze Operation. Hillary had made a deal with
Admiral Dufek that in exchange for the tractors, he
would fly Hillary and his party back to Scott Base.
Admiral Dufek readily agreed, as all other equipment
had to be airdropped to the pole. This was expensive
and not always successful, as evidenced by a 40ft
crater that was made when parachutes on a 8,000 lb
Caterpillar D2 dozer did not open up properly. The
tractors were fully overhauled at the South Pole with
parts from New Zealand and were used by the
American scientists for several years, traveling up to
500 miles from the pole. On the 5th of January,
1958, Hillary, Ellis, Wright, and Bates were flown
back to Scott Base by Admiral Dufek of the US Navy.
Mulgrew stayed at the South Pole to help with
communication between Fuchs’ party and Scott Base.
Hillary flew back to the South Pole with Admiral Dufek
on the 18th of January to meet Fuchs on the 20th.

**DR FUCHS TEAM OF 9 MEN START THE TRANS-
ANTARCTIC EXPEDITION**

On November 24th, Dr Fuchs’ party of six vehicles
headed towards the South Ice, repeating the trip that
they had just returned from a few days earlier. This
time they hoped to complete the journey in twenty-
one days. But because of the weak snow bridges and
crevasses, it ended up taking twenty-eight. The Sno-
cat Rock and Roll fell into a crevasse 15 feet wide and
60 feet deep. It took all five vehicles to pull it out.
Rock and Roll later fell through another crevasse, and
after it was pulled out, they noticed that the large
cast aluminum steering platform for the rear
pontoons had snapped on both sides. Luckily they
had a spare with them. It took all night and most of
the next day to replace. After that, they decided that the less valuable Weasels would go out in front.

The Sno-cat Able fell into a 25 foot-deep crevasse with only the tips of the front pontoon on the surface, and the main weight of the vehicle was supported by the back of the body. They decided to fill the crevasse with snow so they could stand under Able and install the crevasse bridging which were in 14 ft long pieces, each weighing 125 pounds. It took two Sno-cats to pull Able out. On December 12th, they reached the Weasel that they abandoned in the earlier trip. They took the supplies left on the sledge as well as all the salvageable parts from the Weasel - even the antifreeze and gas was pumped out. They replaced the salvaged tracks to Rumble. Scientific research took several hours every night. Aerial reconnaissance showed that they had made it through the worst but still had 1850 miles to go.

They reached South Ice on December 21st and left on the 25th. It is important to note that Hillary’s party had already completed its mission before Fuchs had even reached the South Ice Depot. The original plan was that they would meet near Depot 700, some 1200 miles that Fuchs had yet to travel.

At South Ice, it took 320 gallons of fuel to fill the 8 vehicles (they picked up the two vehicles left earlier on the resonance trip). They loaded up ½ ton of lubricants and 109 barrels of fuel amounting to 5,200 gallons weighing 21 tons. They had nine more tons of supplies including 1 ½ tons of tools and parts, ½ ton of explosives for seismic work, 1 ½ tons of food, ½ ton of kerosene, tents, camping supplies, skis, and other necessary equipment.

They traveled 349 miles in 29 days, reaching the South Pole on January 20th. Other than the crevasses, there were problems with coolant leaks in the Sno-cats, and one needed a new radiator. Every 200 miles they performed maintenance on the vehicles. Each Sno-cat had 296 grease nipples on the rollers, and 50 more on the chassis and pontoons. They had to top off oil in all the differentials and gear boxes, as well as tighten all 130 track bars. For fuel efficiency they changed the carburetor jets on the Sno-Cats every 2,000 feet when above 4,000 feet elevation. On December 31st, a track on the Weasel Rumble broke and had to be abandoned. Fortunately they had left the Muskeg tractor only 6 miles back at that point and were able to retrieve it. It was their original plan to leave several of the vehicles along the way when they became no longer needed as the load lightened.

On January 5th, the party abandoned the Muskeg tractor because it was no longer needed. The next vehicle to be abandoned would be the Weasel, Wrack and Roll, as it was leaking and burning a quart of oil every 10 miles and also had 4 broken U-bolts on the springs. It was abandoned 100 miles from the pole when the engine stopped. They arrived at the South Pole with the four Sno-cats and one Weasel on January 20th, 1958. Fuchs’ party left the South Pole
on January 24th. On February 7th Fuchs’ party reached Depot 700, where it was joined by Hillary who returned to help guide them back to Scott Base. This would save them several weeks of travel since he knew the terrain already. They reached Scott Base on March 2nd, 1958.

It is worth noting that the only major mechanical problem for the Ferguson tractors was in the one of the two that remained at Scott Base. A bolt that kept the power take-off engaging mechanism in place came loose and came in contact with the PTO shaft. This placed pressure on the rear PTO bearing, causing it to fail, and causing pieces of the bearing race to chip and break up teeth of the ring gear. The chipped teeth were ground to remove any sharp edges, and the broken teeth were built up and filed into shape. This re-worked gear lasted longer than expected, and failed in the second year of use, after roughly 200 hours of heavy hauling loads from the ship. A completely different assembly had been brought down on the ship from New Zealand and was replaced.

All three of the Ferguson tractors that went to the South Pole are now in museums. One is in the Canterbury Museum, Christchurch, New Zealand, one is in Auckland New Zealand at the Museum of Transport and Technology (MOTAT,) and the third was sent to the factory in Coventry, England where they were manufactured and later transferred to the Massey Ferguson Beauvais plant in France. Rear Admiral JL Abbot, Commander USN Antarctic Support Force, was responsible for the transfer of the tractors from the US McMurdo Station at the western side of Antarctica, in 1968, where they had been in use after several years of service by the US at the South Pole.

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Home again for a bit. Sue, (named for John Bates daughter), one of the three tractors Edmund Hillary brought to the South Pole in 1958, shown here before restoration and display, at the Massey Ferguson Museum, Coventry, England, part of the Factory in where the tractor was originally produced. Later the tractor was sent to the Massey Ferguson Beauvais plant in France.  


- Joanna Rae, Assistant Archivist, Archives Service, British Antarctic Survey  
- Sigmundg www.commons.wikimedia.org/wiki/File:Ferguson_TE20_Edmound_Hillary.jpg#filehistory  
- Ferguson TE20 in Detail by Michael Thorne, published by Herridge & Son LTD  
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All of the above sources have graciously contributed to this article with the stipulation that NO PART be copied for other uses without obtaining their permission first.
Reminders of Sir Edmund Hillary’s epic adventure to the South Pole have returned after 50 years to rest in the Sir Edmund Hillary Alpine Centre’s dedicated Hillary Gallery.

Three items from Sir Edmund’s Trans-Antarctic expedition – his primus stove, sled meter showing trip mileage from Scott Base to the actual South Pole, an expedition commemorative envelope signed by Sir Edmund and four other members, plus excerpts from a fascinating unpublished account of the expedition – arrived from America last week.

The items were donated to the Aoraki Mount Cook Museum Trust by Wendy Remington, wife of the late American glaciologist Edward “Moose” Remington. Mr. Remington was the glaciologist on the first ‘wintering over’ at the South Pole in 1957-58. After he passed away last year his wife Wendy chose the Sir Edmund Hillary Alpine Centre Museum as the ultimate home of his memoirs and keepsakes.

“I was looking for a place that would treasure my husband’s possessions and keep their story alive so was delighted to learn of the new Sir Edmund Hillary Alpine Centre. It seemed fitting for Edward’s keepsakes to be kept in Sir Ed’s homeland for people to see and enjoy. I know my husband would have been happy with my choice.”

The Sir Edmund Hillary Alpine Centre General Manager Denis Callesen says he is honoured by Mrs. Remington’s decision as the items could have been placed anywhere in the world.

The excerpts from Mr. Remington’s memoirs ‘Such is Life’ are full of action, adventure, US and Kiwi camaraderie, and great romance. They provide fascinating insights into his stay in New Zealand, the South Pole expedition, and his longstanding respect and friendship with Sir Edmund Hillary. The Sir Ed anecdotes are particularly compelling because they’ve never been publicly shared.”

Mrs. Remington, Edward’s wife of 49 years, met her husband in New Zealand when she was on a working holiday with two girl friends. The women were wait staff at the old Warner’s Hotel in Christchurch where several of the scientists stayed while waiting for their ship to the Antarctic. After a brief courtship and a long separation while he was in Antarctica, the pair were married a year later.

Excerpts from Mr. Remington’s memoirs include:

“I didn’t know that Ed and I were to become real friends, so much so that I named my son Scott Hillary after him.”

“An American that had joined our little group, sat and talked to Ed for almost an hour. On the way back I asked him what he thought of the Kiwis. "Oh, they are a great bunch, but I wish I had met Sir Edmund Hillary". That ought to give you a fair idea of the airs that Ed puts on. The fact that he was wearing one of his favourite sweaters, the one with the big holes worn in the elbows, probably didn’t convey what a Knight of the British Empire should look like.”

“At 12.20, Ed who was driving the lead tractor, pulled up to the ring of barrels. Since the three tractors were roped together, they all stopped. According to the sled meter, they had just completed a trip of 1,000 miles... Ed and I swapped primus stoves, his now proudly rests on my bookcase, and Ed also gave me their sledge meter. Tied the wheel so it wouldn’t spin, thus keeping the exact mileage of their trip.”

The Sir Edmund Hillary Alpine Centre Museum is located adjacent to The Hermitage Hotel in Aoraki Mount Cook Alpine Village, within the Aoraki Mount Cook National Park and World Heritage area. The Village is a spectacular 55km drive from the Lake Pukaki / State Highway 8 turn-off and is four hours from Christchurch (272km) and three hours from Queenstown (330km).

For more information please visit www.hillarycentre.co.nz.

Denis Callesen - The Sir Edmund Hillary Alpine Centre General Manager
Phone 03 435 1809 or email denis.callesen@hermitage.co.nz

[1] ...1361.3 miles is the exact mileage shown on the sled meter which is the mileage from Scott Base to the geographic South Pole.
Ron Balham drove one of the Ferguson tractors as far as Skelton Glacier Depot, standing in for Jim Bates, the party’s Diesel-electric mechanic, who had to remain temporarily at Scott Base until his replacement mechanic arrived from New Zealand to look after summer maintenance. Photo credit: Geoffrey Lee Martin

Cover Photos

Front - Ron Balham drove one of the Ferguson tractors as far as Skelton Glacier Depot, standing in for Jim Bates, the party’s Diesel-electric mechanic, who had to remain temporarily at Scott Base until his replacement mechanic arrived from New Zealand to look after summer maintenance. Photo credit: Geoffrey Lee Martin

Back - Postcard, “Designed by Rosie Louise and Terry Moyle of Contour Creative Studio Ltd for Shades Stamp Shop Ltd”, postage stamp commemorating 50 years since Hillary expedition, telegram sent by Hillary at end of expedition, Envelope - these were printed ready to go out when vehicles reached the South Pole. It had been assumed Fuchs would reach there first with the Sno Cats so the tractors weren’t shown. This belonged to Art Jorgensen, one of the base crew and was signed by everyone at the South Pole.