commencement of rock dumping into upstream toe of dam. (my note: side-tipping rail cars)
MILITARY ASSISTANTS TO THE DISTRICT ENGINEER AT FORT PECK DAM

Major C. Kittrell, C. of E.
Major C. N. Iry, C. of E.
Capt. A. W. Pence, C. of E.
Capt. D. A. D. Ogden, C. of E.
Capt. R. Lee, C. of E.
Capt. C. H. Chorpening, C. of E.
Capt. J. R. Hardin, C. of E.
Capt. E. G. Plank, C. of E.
2nd Lt. C. Smyser, C. of E.
2nd Lt. K. L. Madsen, C. of E.
2nd Lt. R. J. Harvey, C. of E.
J. J. Murphy, warrant officer

PRINCIPAL CIVILIAN ENGINEERS

T. W. Ragsdale, ass't chief of operations
C. S. Smith, sup't of dam construction
O. F. Brinton, sup't of tunnel construction

ARMY OFFICERS PREVIOUSLY ASSIGNED

Capt. J. B. Hughes, Oct., 1934-Aug., 1936
Lt. R. J. Fleming, June, 1934-Sept., 1935
Lt. C. R. Broshous, Sept., 1933-May, 1936
Lt. T. D. Rogers, Sept., 1934-April, 1936
Lt. R. Green, Dec., 1934-Jan., 1936

MEN IN CHARGE OF THE FORT PECK PROJECT

Left to Right: Colonel R. C. Moore, C. of E., Division Engineer, Kansas City; Lt. Colonel T. B. Larkin, C. of E., District Engineer, Fort Peck; Major C. Kittrell, C. of E., Chief of Operations, Fort Peck.
THE GEOLOGY OF THE FORT PECK
DAM SITE: PRELIMINARY REPORT

by

CHESTER K. WENTWORTH
ASSOCIATE PROFESSOR OF GEOLOGY
WASHINGTON UNIVERSITY.

INTRODUCTION

Location and Name

(1) The Fort Peck dam site is located on the Missouri River about eleven miles above the mouth of Milk River in northeastern Montana. The parallel of 49 degrees north latitude cuts the axis of the proposed dam near the left bank of the river, the site being 69 miles south of the International Boundary and 111 miles west of the North Dakota line. With respect to the United States Land Surveys, it is near the center of Township 26 North, Range 41 East.

(2) The project takes its name from the site of the old Fort Peck, located a short distance up the river. The nearest town is Glasgow, 18 miles to the northwest, and the nearest railroad point on the main line of the Great Northern Railway is about 10 miles distant.

Elevations and Areas

(3) The elevation of the low water surface at the Fort Peck dam site is 2057 feet. The greater part of the valley flat, some 7000 feet in width, lies between 2030 and 2070 feet. Margins of nearby spurs reach 2350 feet, more than 300 feet above the river channel.

(4) Present plans call for a dam 231 feet in height above the river bed, providing a pool elevation of 2242 feet, with a crest 20 feet higher. The structure will have top and bottom lengths of about 9000 and 7000 feet respectively, with approximately 10,500 feet of low dike, additional, on the left side. The reservoir, at pool elevation of 2242 feet, extends up stream a channel distance of 175 miles and includes an area of 331 square miles or 212,000 acres. Its storage capacity is approximately 17,000,000 acre-feet.

SCOPE OF INVESTIGATION

History

(5) The Fort Peck dam site was examined in the summer of 1931 by F. H. Fahlquist, Geologist, who submitted a brief report to the District Engineer. In the fall of 1931, Captain Wyman and Colonel Moore made a reconnaissance to determine if an increased storage up to 17,000,000 feet seemed sufficiently in prospect to justify further surveys. Samples of surface materials were collected by S. Neff, Assistant Engineer, in 1932.
(6) An examination preliminary to detailed surveys was made by J. L. Murphy in March, 1933. Core drilling and detailed exploration of the site was authorized on June 23, and survey work was commenced June 24. Bids were accepted and core drilling was commenced late in July.

(7) The present writer, in company with J. L. Murphy, assistant Engineer in charge of field operations, Lieuts. H. C. Wolfe and L. J. Clisterbon of the Kansas City office, made a two-day geological reconnaissance July 22nd and 23rd. In August the site and exploratory operations were inspected by the District Engineer, Captain Theodore Wyman, Lieut. Walsh and C. W. Sturtevant. During September the site and materials of construction were studied by W. F. Gehrig, from the office of the Chief of Engineers, and C. W. Sturtevant.

(8) Between September 4th and September 23rd, the writer divided his time between field studies in the vicinity of the site and the commencement of laboratory work on overburden and core materials in a field laboratory established at Glasgow. Survey operations and core drilling continued during the month of September and were still in progress when this report was transmitted on September 28, 1933. Conclusions herewith are therefore based on partial results of exploration, together with somewhat scanty preliminary laboratory studies as indicated in the proper sections below.

Outline of Field Studies.

(9) Exploration of the rock formations at the site includes somewhat more than 3000 feet of 3-inch core drilling in holes spaced along the axis of the proposed dam. At present writing six test pits have been planned and five have been practically completed. In addition, a large number of samples of surface materials have been collected from shallow holes at various points on the upland and in the flood plain.

(10) A number of auger holes have been put down in such positions as to supplement the data from drill holes. The writer has examined the results of all these operations as well as outcrops and topographic features of the site. Especial attention was given to the weathering of the shale and to the problem of suitable materials for earth fill constructions. Abundant, well distributed, specimens for analysis and study were secured from the core drilling, the walls of test pits and the other excavations.

Outline of Laboratory Studies

(11) A considerable number of the specimens of overburden first collected were analysed in the laboratory maintained at Kansas City. Commencing early in September this work was transferred to the newly established field laboratory at Glasgow. Here practically all samples of overburden are to be mechanically analyzed for particle sizes, either by sifting or by elutriation. A general inspection and classification of materials is also carried on here.

(12) Representative samples are weighed as collected to determine specific gravity, porosity, and water content. Colloid content is estimated by the ignition loss method. Permeability of natural samples collected in sheet metal sleeves
is determined by subjecting the sample to water under various pressures. Further studies, not yet completed, include microscopic examination of thin sections and determination of ultimate crushing strength.

**General Geology**

**Physiography**

13. The Missouri River flows in a general northeasterly direction in the region of the Proposed Fort Peck reservoir. Downstream from the mouth of the Musselshell River its general course is northeasterly for about 20 miles to Leavenworth, then due east for 35 miles, finally northeast for 25 miles to the mouth of Milk River. Channel distances are much greater than those given, especially in the two northeasterly stretches which are marked by broad meanders averaging two or three miles across.

14. Eastern Montana is a region of rolling upland plains broken by occasional higher hogbacks and buttes and by dissected, badland topography and lowland flats along the courses of streams. The exact character of the topography and of the vegetation varies from place to place according to the underlying rock formations. Except for the isolated mountain groups such as the Little Rockies and others, the relief is well under 1000 feet.

15. In the vicinity of the Fort Peck dam site the highest parts of the upland rise to elevations of about 2400 feet, nearly 400 feet above river level. East of the river is a broad belt of shale badlands, drained by the ramifying branches of several ravines which are dry most of the year. The highest points at a quarter mile from the foot of the bluffs rise to about 2350 feet or about 110 feet above the proposed water surface. Farther back there is a gradual rise of the topography one or two hundred feet more.

16. The left or western wall of the valley at the site is formed by the end of a broad spur of the upland which is bounded on the north by the valley of Galpin Creek and on the south by several meanders of the river itself, upstream from the axis. At the east end this spur has an unbroken width at the top of about a half mile and the width gradually increases to over a mile. At the east end and for about one and one-half miles westerly the flat top of this spur reaches elevations ranging from 2220 to 2240 feet. Farther west elevations rise somewhat rapidly to 2300 feet or more and join broadly with the main upland.

**Areal and Structural Geology of Eastern Montana**

17. Eastern Montana is underlain by a series of late Mesozoic and early Tertiary formations which are found over enormous areas of the Great Plains from the Arctic Ocean to the Gulf of Mexico. In general these dip eastward at a low angle, through more steeply than the general land surface, so that the younger formations are exposed on the east, the older on the west. Combinations of gentle, local warpings with dissection by the principal streams has produced considerable irregularity of outcrop pattern. Most commonly the outcrops of lower, older formations extend downstream in the valleys of the streams for some miles eastward from the point where younger formations appear on the bluffs.
(18) Glasgow and the Fort Peck dam site are located within the outcrop belt of the Bearpaw shales, which forms the floor of the Missouri River Valley for nearly a hundred miles to the east. However, on the higher parts of the upland, southeast of the river at the Fort Peck site, the Lance formation appears and forms the surface rock for a number of miles. Only the Bearpaw shales, among the bedrock formations, is of practical consequence in the construction of a dam at this point.

LOCAL GEOLOGY

Structure, Formations and Outcrops

(19) From the testimony of local wells and the known structure and thickness of the formation, it is certain that the Bearpaw shales formation extends to depths of at least five or six hundred feet below river level at Fort Peck. Its bedding pertakes a slight regional dip to the east but for construction purposes it may be regarded as essentially horizontal. It rises to at least 2250 feet in the right abutment and is exposed throughout the face of the right bluff down to the level of the valley flat.

(20) At present writing two drill holes have reached shales beneath the flood plain. These show the surface of shales to approximate the elevation 1940 feet and indicate a thickness of 110 to 120 feet of alluvium. It is most probable that the shales surface falls gradually at the right margin of the flat to reach 1950 or 1940 feet some distance away from the bluff. At the left the shales surface is exposed for a few feet near the base of the bluff but is nowhere higher than about 2070 feet.

(21) In Test Pit B the shales was encountered at 2064 feet and for one and one-half miles west along the axis probably does not rise above 2050 feet west of the way. West of this point, as shown by its elevation of 2230 feet in hole 26, the shales rises steadily and probably approaches the upland level within two or three miles.

(22) On the upland east of the site and near the margins of some of the spurs, there is a thin but variable cover of glacial till, with associated gravel lenses. On the west abutment spur the till occurs to greater depths. So far as present data indicate, the till is 80 to 100 feet thick over the western part of this spur, but thins with the lowering of the topographic surface and is only a few feet thick in the upper part of Test Pit B at the brow of the west bluff.

(23) Below the glacial till and between it and the shales in the western spur is a formation consisting largely of fine and medium sand which was deposited by the river, possibly during the time of glacial invasion. Little or no gravel occurs in this formation.

(24) The alluvium which occurs across the valley flat to depths exceeding 100 feet consists chiefly of sand with interbedded clay beds, probably derived as wash from the shales bluffs. At the base a few feet of gravel lie immediately...
on the shale, at least in some places. It is probable that larger thicknesses of clay will be found in the alluvial section near the bluffs than near the center of the floodplain but data to show this have not yet been obtained.

**LITHOLOGY AND PHYSICAL PROPERTIES OF MATERIALS**

**Bearpaw Shale**

(25) The Bearpaw formation consists of dark gray or black, nearly uniform clay shale beds of marine origin. It is about 1000 feet thick and shows little variation from top to bottom. A few layers, irregularly distributed, contain coarser grains of silt or sand size and there are a few layers of volcanic ash, of which the larger part has been altered to bentonite. In the natural exposures and road cuts certain beds contain numerous discoidal clay ironstone concretions, the outer layers of which are usually oxidized to limonite. On many of the shale exposures are numerous gypsum crystals, of the variety known as selenite.

(26) The weathering of the shale is of special interest. The process is promoted chiefly by the wetting and drying incident to exposure at or near the surface. In the deeper parts of the shale there are evidently a few, nearly vertical joints, since these appear not only in some of the fresher exposures but also cut the cores from some of the drill holes. However, a large number of other joints and irregular partings develop as the shale is weathered. In certain outcrops, the shale weathers to fairly thin, flat flakes but more commonly the fragments are rudely flattened and are bounded by irregular oblique and curved surfaces.

(27) At a depth of several feet below the surface the partings seem to have started and the fragments are marked out, though not to the same minuteness as nearer the surface. Together with the separation of the shale flakes there is also a leaching of the clay substance which goes in considerable measure into colloidal solution. Various alkali salts are deposited on the surfaces of the outcrop and in small plays on the flats.

(28) The prime importance of both wetting and drying and that the shale is firm and sound at depth is apparent from simple tests. Both dry and wet (saturated) firm shale are found in the cores. **Dry shale placed in water slacks and crumbles on edges at once and a ring of turbid and colloidal material expands around it. Within a few minutes or an hour or two, the specimen is a shapeless mound of mud and small flakes, a few of which offer greater resistance.**

(29) That this disintegration is due to the action of water, only on dry shale, is shown by the fact that wet shale samples can be placed at once in clear water and will keep with no apparent change for days and weeks. On the other hand, when the wet shale dries, its surface spalls off and cracks develop. According to the length of time such a specimen dries or the number of times it has been wetted and dried, it partially or wholly disintegrates on being placed in water.

(30) The slacking property possessed by all the shale is found in extreme and remarkable degree in the material known as bentonite. This consists of
nearly pure clay minerals (hydrated aluminum silicates) with much less sand and other non-plastic material than the shale, and has been formed by the weathering of thin beds of volcanic ash which were laid down in the Bearpaw Sea from contemporaneous eruptions. Bentonite, when pure, may absorb several times its own volume of water and swells to an extremely plastic, unctuous mass, and its commercial uses are based on these properties.

(31) In thick beds, or in thin beds critically placed in a formation subject to concentrated loads bentonite offers a serious hazard. The same is true in a situation where sheeting might take place and leakage promoted. Most of the bentonite layers in the Bearpaw shale do not exceed two or three inches in thickness. In view of the fact that means must be provided for covering and protecting all excavated parts of the shale formation and that no restricted or exposed parts of the shell will be subjected to even moderate stresses from artificial structures, it is believed that the bentonite layers will not constitute any appreciable special hazard.

(32) A few determinations show the Bearpaw shale to possess a porosity of about twenty per cent. No tests of permeability have yet been made. However, it is certain that the shale is a highly impervious formation and the presence of water at various points close to the base of the east bluff indicate that even where it is a somewhat weathered it is capable of maintaining a very steep line of percolation. Ten determinations of the ultimate compressive strength of the Bearpaw shale have been made, as shown in the following table:

<table>
<thead>
<tr>
<th>Lab. No.</th>
<th>Size of Tested Section</th>
<th>Size of Area in Square Inches</th>
<th>Maximum Load Produced in lbs.</th>
<th>Maximum Rupture Strength Per sq. in.</th>
<th>Height Hole</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Diam. 2.65</td>
<td>6.29</td>
<td>17910</td>
<td>2345</td>
<td>2.58&quot;</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>Diam. 2.91</td>
<td>6.65</td>
<td>20240</td>
<td>3040</td>
<td>2.46</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>Diam. 2.85</td>
<td>6.38</td>
<td>19950</td>
<td>3125</td>
<td>2.55</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>Diam. 2.78</td>
<td>6.07</td>
<td>22280</td>
<td>3735</td>
<td>1.30</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>Diam. 2.80</td>
<td>6.16</td>
<td>19900</td>
<td>3230</td>
<td>2.62</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>Diam. 2.79</td>
<td>6.11</td>
<td>19730</td>
<td>3225</td>
<td>1.62</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>Diam. 2.80</td>
<td>6.16</td>
<td>16700</td>
<td>2710</td>
<td>1.44</td>
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</tr>
<tr>
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<tr>
<td>24</td>
<td>Diam. 2.68</td>
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<td>18860</td>
<td>3540</td>
<td>2.32</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>Diam. 2.89</td>
<td>6.56</td>
<td>19540</td>
<td>2975</td>
<td>2.33</td>
<td>1</td>
</tr>
</tbody>
</table>

Aver. 3100

These show an average strength of 3100 pounds per square inch, with upper and lower values of 5,725 and 2,710 pounds, respectively. Since the average ultimate test value corresponds to 225 tons to the square foot, it is believed on a very conservative basis that the shell, where unimpaired and protected, will safely carry loads of at least 5 tons to the square foot.
Glacial Till

(33) The glacial till found in large amounts in the upper part of the left abutment spur is a typical boulder clay or hard-gum. It carries cobbles and boulders up to two or three feet in diameter imbedded at random in a matrix of tenacious, hard clay and sand. Because of its deposition by ice during the glacial invasion and the lack of aqueous sorting it is wholly unstratified and the intimate intermixture of fragments of all sizes makes it highly impervious to circulating waters.

(34) So far as could be seen in the test pits and contours the glacial till is uniform from top to bottom. On the surface of the upland its presence is attested by numerous cobbles and boulders which have been washed from it, associated with the till are a few gravel lenses of limited thickness and extent.

Alluvium

(35) The larger part of the alluvium both under the flood plain and in the terrace material under the till of the left spur consists of fine and medium-grained sand. Much of this lies in thick beds without close stratification and that in the left spur may have been deposited by flood waters yielded by melting glacial ice. A few layers of finer silt and other layers of course sand with cobbles occur in the alluvium but the total bulk of these is small. Detailed studies of these materials are in progress but have not yet been completed.

(36) A number of beds of stiff, plastic clay were penetrated in the drill holes in the flood plain which are believed to be the result of lateral wash from the bluffs. The present surface of the valley flat is veneered with a deposit of gray mud which apparently increases in thickness toward the bluffs and is clearly derived from them by rain wash. Additional drill holes will reveal whether the clay lenses in the flood plain alluvium increase in number and thickness toward the bluff as is suspected.

Special Features

Right Abutment

(37) The axis of the dam in the right abutment is located at the apex of a divide between two minor drainage systems, one north and the other south of the abutment. Several low saddles are found, back from the bluff, with elevations between 2300 and 2350 feet. The narrowest part of the divide at the pool level of 2242 feet is about 1600 feet wide. The dividing spur is considerably wider at the face of the bluff and at pool level is not cut by a revine of any considerable length for upward of a half mile.

(38) The bluff is cut by numerous short draws and gullies into a local bedland configuration. Slopes vary from 25 to 45 degrees and consist of weathered shale, nearly devoid of vegetation. In most places the immediate surface is marked by polyhedral cracking of the surface shale-derived mud. A few inches
APPENDIX C
A CHRONOLOGICAL HISTORY
FORT PECK DAM

Note: In some cases, there were significant inconsistencies in dates stated in various references. The dates cited in this appendix are the ones which appear most likely to be correct.

1805: William Clark, an army officer, and Meriwether Lewis and their famous exploration party passed the eventual site of Fort Peck Dam. They were the first white men to travel the upper reaches of the Missouri River.

1879: Colonel Campbell Kennedy Peck traveled to Washington, D.C. to recommend the construction of a dam near Ft. Peck, the former trading post and Indian agency which he ran and was named after him.


Fall, 1928: Army Corps of Engineers conducted preliminary reconnaissance.

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October 3, 1933: Secretary of War transmitted Missouri River Basin "308 report" to Congress. It recommended construction of the "Fort Peck navigation reservoir" for the primary purpose of the improvement of river navigation from Sioux City, Iowa to the mouth of the Missouri River. Incidental purposes were flood control, hydroelectric power, and irrigation.

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December 18, 1933: Work commenced on the branch railroad to the dam site.

January 10, 1934: Work started on the hull of the first dredge unit.

January 27, 1934: Montana State Highway Commission commenced construction of a paved highway from Glasgow to Fort Peck.

January, 1934: Work started on the construction bridge and trestle over the Missouri River.

April 16, 1934: Railroad spur from Wiota to site completed.

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June, 1934: Work commenced on stripping the overburden from underneath the dam.

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July, 1934: Work started on the steel sheetpile cutoff wall.

August 6, 1934: President Franklin Delano Roosevelt visited the construction site for the first time.

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October 1, 1934: First power delivered to the site over the newly completed 288 miles (463.5 kilometer), 154 kilovolt line from the Montana Power Company's Rainbow Falls station near Great Falls.

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October 17, 1934: The trestle and bridge for combined railroad and vehicle service across the Missouri River was completed. Total length of railroad trestles at the dam site equalled six miles (9.6 kilometers).

November, 1934: Railroad spur line extended six miles (10 kilometers) from the dam site to the spillway construction site.

December, 1934: Excavation for the spillway commenced.

Winter, 1934-1935: Concrete placed in the portals of the diversion tunnels in temperatures as low as minus 17 degrees Fahrenheit (minus 27 degrees Celsius).

February 26, 1935: Started placing concrete in the tunnels.

May 13, 1935: Construction commenced on spillway gate structure.

May 27, 1935: The passage of the Parker Dam Bill "legalized" the Fort Peck navigation reservoir project.

July 28, 1935: Apparent date that first concrete was placed in the spillway.

August 30, 1935: The project was formally authorized by the passage of H. B. 238, the River and Harbor Act.

November 25, 1935: Steel sheetpile cutoff wall completed.

July 15, 1936: Employment peaked at over 10,500 workers, a number well in excess of the peak work forces of both Hoover and Grand Coulee Dams (6,000 and 7,998, respectively).

September, 1936: Work commenced on the spur railroad from Harlem, Montana to the Snake Butte quarry where riprap would be obtained.

September 20, 1936: Representatives of 29 nations visited the construction site.

November 23, 1936: Fort Peck Dam was the cover story on the first issue of Life Magazine.

December, 1936: The lining of the diversion tunnel shafts was completed.

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November 23, 1936: Fort Peck Dam was the cover story on the first issue of Life Magazine.

December, 1936: The lining of the diversion tunnel shafts was completed.

January, 1937: The lining of the diversion tunnels proper was completed.
April-June, 1937: The four dredge units were moved from upstream of the dam to downstream.

May, 1937: Harlem-Snake Butte railroad spur completed and riprap for the upstream face of the dam began moving towards Fort Peck.

June 24, 1937: In an exciting race against a flooding Missouri River, the portals to the diversion tunnels were completed, closure occurred, and the river was diverted through the diversion tunnels.

July 24, 1937: Major Clark Kittrell replaced Lt. Col. Larkin as Fort Peck District Engineer for the Army Corps of Engineers.

October 3, 1937: With the dam approximately three-fourths completed, President Franklin Delano Roosevelt made his second visit to the construction site. Although the dam was never officially dedicated, many people claim that this second visit constituted the dam's dedication.

May 18, 1938: President Roosevelt signed Fort Peck Power Act authorizing the construction of hydroelectric power generating facilities.

June 5, 1938: Spillway considered complete.

September 22, 1938: A major slide involving less than 5 percent of the inplace material, 5,000,000 cubic yards (3,800,000 cubic meters), occurred when a section 1,700 feet (520 meters) long slid into the partially filled reservoir almost covering the diversion tunnel inlets. Thirty-four men were on the section when it unexpectedly slid, but all but eight survived. Subsequent investigations attributed the slide to a foundation failure.

March 2, 1939: Board of inquiry issued its report. Majority of the members attributed the slide to foundation failure and absolved the hydraulic-fill of blame.

November 5, 1939: Last of hydraulic fill placed. The top 25 feet (7.6 meters) of the dam were subsequently placed by rolled fill.

May, 1940: A sand boil developed on the downstream toe of the dam but was remedied by the construction of emergency relief walls.

July 1, 1940: Major Kittrell succeeded by Major C. N. Iry as Fort Peck District Engineer, Army Corps of Engineers.

September 18, 1940: Construction of power plant #1 commenced.

October 11, 1940: Fort Peck Dam "topped out."

November 19, 1940: Dam and reservoir considered operational.
April-June, 1937: The four dredge units were moved from upstream of the dam to downstream.

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## Construction Starting Dates:

(Townsite Bldgs.)

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**Sheet 1**
### Employment Data
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CALENDAR OF WORK

Oct. 4, 1933 - Project approved by the President under the Public Works program as Project No. 30 in charge of the Corps of Engineers, U. S. Army. Acquisition of necessary land and clearing operations started at once.

Nov. 21, 1933 - Major T. B. Larkin, Corps of Engineers, arrived to take charge of work.

Dec. 1933 - Construction of 12-mile railroad from Wiota to site started.

Jan. 11, 1934 - First work started in work yard (work - construction barge)

Jan. 15, 1934 - Work started on first dredge hull.

Jan. 27, 1934 - New highway from Glasgow to site started by Montana State Highway Dept.

Jan. 1934 - Bridge and trestle over Missouri River started.

Mar. 1934 - Town buildings and services started under a group of contracts.

Apr. 18, 1934 - Contract awarded for driving tunnels.

May 18, 1934 - Work started on driving of tunnels.

May 29, 1934 - Work on 298-mile powerline from Great Falls started.

Apr. 1934 - Railroad from Wiota to site completed.

Jun. 12, 1934 - First dredge hull launched.

Jun. 19, 1934 - Stripping base of dam started.

Jul. 1934 - Sheet pile cut-off wall started.

Aug. 6, 1934 - President Roosevelt visited Project.

Aug. 1934 - Highway from Glasgow to site completed.

Oct. 1, 1934 - Power turned on.

Oct. 4, 1934 - Delivery of toe gravel began.

Oct. 1934 - Bridge and trestle opened for traffic.

Oct. 1934 - Town buildings and services completed.

Oct. 15, 1934 - First dredge started digging winter harbor.
Nov. 15, 1934 - Spillway excavation started; first contract completed October 1, 1935, with 2,535,945 cu. yds. moved.

Nov. 19, 1934 - Stripping base of dam completed. Contractors moved 4,153,550 cubic yards in 155 days.


Apr. 21, 1935 - Dredging season started.

May 13, 1935 - Spillway gate structure started. Third spillway contract.


Oct. 31, 1935 - Dredging season ended; 21,742,000 cu. yds. in place.

Nov. 25, 1935 - Cut-off wall completed. Over 17,000 tons of steel used.

Jan. 12, 1936 - 2,791,000 cu. yds. of toe gravel in place.

Jan. 15, 1936 - Tunnel contract taken over by Government.

Apr. 15, 1936 - Dredging season started.

Jun. 4, 1936 - Lining of tunnels started.

Jun. 28, 1936 - Work started on emergency gate contract.

Jul. 21, 1936 - Shaft excavation completed.

Jul. 1936 - Peak of employment - 10,546 persons on July 15.

Sep. 10, 1936 - Work started on Harlem-Snake Butte railroad contract.

Nov. 5, 1936 - Dredging season ended; 50,649,000 cu. yds. in place.

Nov. 17, 1936 - Completion of enlargement of tunnels.

Dec. 1, 1936 - Shaft lining completed.

Dec. 5, 1936 - 402,171 cu. yds. of boulders in place.

Jan. 22, 1937 - Tunnel lining completed - Over 15,000,000 pounds of steel used.

Apr. 4, 1937 - Dredging season started.

May 17, 1937 - Harlem-Snake Butte railroad completed.
May 10, 1937 - Set first emergency shaft Stoney gate.

May 25, 1937 - Outlet portals completed.

May 1937 - Passed 8,000,000 net tons on Government railroad.

June 1, 1937 - 2,978,881 cu. yds. of gravel in place.

* Jun. 9, 1937 - Record day dredging - 239,540 cu. yds. in place.

Jun. 20, 1937 - Completed inlet portals.

Jun. 1937 - Passed 37,000,000 man-hours mark.

Jun. 1937 - Passed 14,000,000 cu. yd. mark on spillway excavation.


March 26, 1941 Fegles Const. Co. Ltd. contract # for completion of Main Control Gates completed and accepted.
This was the Dave Francis Ranch on the Missouri River before clearing operations were started. Now the old homestead site is covered with thousands of tons of hydraulic fill.

VIEW LOOKING EASTWARD OVER THE FORT PECK DAM SITE, SEPTEMBER, 1933

Photo by Ellis Photo Service, Glasgow, Montana
AERIAL VIEW OF FORT PECK DAM-SITE SHOWING ENTIRE TRESTLE-WORK BRIDGES. DREDGES WORKING IN RIGHT BACKGROUND. TAKEN AT 5000 FEET.
FORT PECK
A Job Well Done

October 1933 ----- August 1977
Printed By

NeMont Printers

Box 686

Glasgow, Montana 59230

$10.00 per Copy
Aerial view of Wheeler, Montana looking south-east toward the Missouri River.

Right through the middle of some of the boom towns that dotted the area surrounding Fort Peck ran some of the dredge pipelines carrying materials (mud) to build the dam. This scene is at McConel City on the East side of the Missouri in McConel County.
Residents of Park Grove, one of the first boom towns, enjoy a Spring run-off in front of their residence.

Flood waters washing down the Park Grove "streets".
FORT PECK PROJECT
DAM SITE PRIOR TO CONSTRUCTION

AXIS OF THE DAM
Colorful Days of Ft. Peck Recorded By Sam Gilluly

NOTE: The following article from The Independent Record of Helena tells some of the colorful highlights in the Courier career of former editor, Sam Gilluly, now associated with the Montana Chamber of Commerce in Helena.

While observing Sam Frederick Gilluly seated behind a racetrack-size desk with a copy of the Wall Street Journal near at hand, it was hard to believe that he was once a rough and tumble newspaperman in one of the wildest communities the west has ever known.

Gilluly, now publications manager for the Montana Chamber of Commerce, at present is dedicated, as he puts it, to stimulating the businessmen of Montana to become politically active and work diligently for the party of their choice. He carries on this altruisic work through the columns of The Montana Citizen, a bi-monthly state chamber publication of which he is editor.

"Knight Errant"

When his colorful past is taken into consideration, Gilluly's professional status makes him seem like a "knight errant riding in an unlucky century."

But it wasn't always that way. Twenty-eight years ago, Gilluly was scurrying about the Fort Peck area in Valley County as a gatherer of the day's news for The Glasgow Courier. He refers to the Fort Peck boomtown, complex, including New Deal, Square Deal and Wheeler as "Chicago gangland with open spaces."

"Many of the towns that are now glorified in Western TV shows couldn't hold a candle to some of the Fort Peck communities when it comes to being wild and wooly," Gilluly declared. "There were 10,000 men working on the dam and hundreds of card sharps, grifters and confidence men standing by for a piece of the payroll."

Big Shots Arrive

According to Gilluly, Fort Peck and its environs soon became a branch headquarters for the big shots of the St. Paul and Minneapolis underworld.

"Some of the nation's most going to be fingerprinted, 200 men failed to show up for work the following day."

As editor of the Republican Glasgow Courier in those days, Gilluly described himself as "a voice crying in the wilderness."

Landau Swamped

"In the 1936 presidential election," he declared, "Franklin D. Roosevelt polled 5,882 votes. His Republican opponent, Alf Landon of Kansas, received 996 votes. I am pretty sure most of the Landon votes came from former residents of Kansas."

While editor of the Courier, Gilluly and the present chief justice of the State Supreme Court, James T. Harrison, combined their talents to save one of the world's great press services from being scooped on a speech made at Fort Peck by President Roosevelt.

"It happened this way," Gilluly said, "The correspondent for this press service became involved in a marathon poker game and forgot all about FDR. In fact, he also had a little bit too much to drink."

GETS SOS

"I received an SOS from the headquarters of her press service," Gilluly continued. "The complete text of FDR's off-the-cuff talk, was required. I round-up Judge Harrison, who then was Valley County District Court reporter. He got all Roosevelt said in shorthand and transcribed his notes for me. That saved the day for the press association."

Gilluly was born April 25, 1908 in Billings. His father, John A. Gilluly, was editor of the Billings Evening Journal. The elder Gilluly later became editor of Montana Banker which was published in Great Falls.

After he was graduated in 1930 from Montana State University School of Journalism, Sam Gilluly spent two years as police reporter for the Great Falls Tribune.

"Call of the Wild"

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**Big Shots Arrive**

According to Gilluly, Fort Peck and its environs soon became a branch headquarters for the big shots of the St. Paul and Minneapolis underworld.

"Some of the nation's most notorious kidnappers, bank robbers and killers gravitated to Fort Peck," Gilluly added, and some of them actually went to work on the dam as a blind for other operations. When the U.S. Army Corps of Engineers announced that all workers were

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"Call of the Wild"

Then he answered what he termed "the call of the wild" and went to Glasgow where he remained as editor of the Courier until 1930 when he moved to Helena.

"I don't want to leave the impression that Fort Peck didn't have a good side," he explained. "It took thousands of people off the dole. It was perhaps the last big construction project in the United States that, as far as numerical strength was concerned, was dominated by common laborors. It could be called the last stand of the pick and shovel artist."

Gilluly believes that Fort Peck has a great potential for industrial development.

**Saved Sioux City**

"The dam's flood control value cannot be underestimated," he said. "A few years ago, by reducing the Missouri River flood crest at Sioux City, La., Fort Peck saved that city from inundation. During World War II, Fort Peck fed water into the Mississippi River which made vital and heavy navigation in that stream possible."

Gilluly was married Sept. 3, 1930 to the former Esther Hart of Missouri. They have three sons who all are in the news collecting business. Dick, 29, is a reporter for The Billings Gazette. Bob, 23, is a reporter for the Great Falls Tribune, and Jack, 23, is sports publicity director for Montana State University.

"No one can convince me," the proud father, concluded, "that the stain of printer's ink isn't hereditary."
A Town That Refused to Die

by May Billing

Even before the influx of homesteaders to eastern Montana, Ingomar had already established a reputation in the sheep industry with shearing pens capable of turning out 6,000 sheep daily, said to be the largest in the nation. Ingomar and its sister city, Sumatra, became the jumping off point for homesteaders coming in on the immigrant trains. The town thrived with all the business essential to a town, including a bank, flour mill, hotels, cafes, garages, livery stables, and the inevitable loan companies and wheeler dealers eager to locate you on a choice 320 acres.

However, Ingomar had one drawback—a scant water supply, none of it fit for human consumption. Regular shipments of water came in on the Milwaukee Railroad in a locomotive tender car from Harlowton 120 miles away. In later years, when the Milwaukee Railroad went out of business, the town was forced to depend on scant rain water, local springs, or water trucked in from Forsyth. This lack of water proved to be a deterrent to the many volunteers who fought flames in a desperate effort to save their town on a July day in 1921 when fire swept down both sides of main street consuming most of the business buildings. Discovered about 2 a.m. in the rear of Cox's Cafe, the belching flames consumed both the Grand and Commercial Hotels, hardware and merchandise stores, two pool halls, the printing office, and 15 other buildings. Firefighters could concentrate only on staying ahead of the flames, saving what merchandise and personal belongings they could within the buildings.

With homesteading on the decline, most of Ingomar's buildings were never replaced. Among the buildings standing are a schoolhouse and gym

(Continued on Page 2)
by I.W. (Wes) Rimel

Wheeler is an old town, a ghost town. Yet it lives a new life, just barely. Where the old Black Hawk Tavern stood, there is now a respectable business in a new building, a bed and breakfast named Petticoat Junction. That sounds like a complete turn-around from the old days building, a bed and breakfast in the 1910-s.

In the late 1910-s, the ghost town became a ghost town. A half dozen all-night taverns and numerous beer parlors. The taverns opened at eight each evening, seven days a week, and ran until the next morning at six. Some establishments never closed at all. People crowded the streets at night, and men consumed more liquor than they could handle with women of questionable reputation. Some walked the streets, some were available in establishments that catered to the off-duty men. Liquor by the drink and gambling were both illegal in Montana at the time, yet no one paid the slightest heed. You could buy floor shows, offering drinks all night or play poker. There were no floor shows, but plenty of dance and drink. The music tinkled until daylight. A glass shop was open, the men received a nickel a glass for each beer or glass of whiskey that she induced the boys to buy.

Ruby Smith was the first settler in Wheeler back in 1934. She opened an eating spot along the road. Within a month, the town had sprung up almost full-sized around her. Ruby then opened the Wheeler Inn, one of the biggest and most profitable of the all-night establishments. There were no stone or steel buildings in Wheeler. It was all wood. Water was available—one side of town, only—from wells. Boomtown prices were the norm. Rents were fairly reasonable, but food was expensive for the times. There were three religious establishments. Holdups were common. Guns were seldom fired. Autos raced up and down streets, herded (not driven) by indebted drivers. Some reached speeds of 70 miles per hour. Fillings and auto accidents led to the introduction of a form of law in Wheeler. It was too far from the county seat at Glasgow and too remote for the State Patrol, so locals set up a justice system. A deputy sheriff, two constables, and two justices of the peace were installed. The justices seemed to earn the most.

Dr. C. C. Lull, a medical doctor who practiced in Wheeler, wrote of his experiences. The unpublished article was entitled, “The Last Frontier.” He wrote of the wild driving, whiskey drinking, and free spending, but he also wrote, “They are here for the work they get, to maintain themselves honestly, with the spirit of the pioneer. There were new fields to conquer, new friends to find. Much to do—to gain—the chance to make a living for their families, to dare to be dependent upon no one for their support, not even the government.” He quoted one acquaintance as saying, “Doc, ain’t this a hell of a place?” “There is nothing but thirsties, black widow spiders, ticks, rattlesnakes, and heat. We’re living in pastebroad boxes and eatin’ dirt, with nothin’ to do when we’re not workin’ fast juggle beer and wake up with a headache. Don’t you think we’re all crazy?”

Eventually Wheeler grew to 4,700 souls and 80 stores and businesses. There were 20 all-night saloons. The lower element included gamblers, whores, pimps, professional dancers, graters, robbers, and morphine addicts, not to mention a few who were dodging the law.

Ivy McNulty Stebelton spent a part of her young life growing up in Wheeler. She wrote of her experiences in “Footprints in the Valley.” Their first winter was spent in a 10x14-ft. tarpaper shack. Drinking water was delivered by truck. When her father bought a log house for $500, her mother started to pack without asking any questions. Her older sister had her own band and played the piano. They played afternoons, took a break, then played all night. Theaters, clubs, and bars stayed open 24 hours a day. It was a carnal atmosphere.

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Missoula Hotel Office, 1929 • Photos courtesy of the H.A. Vasey Sr. Family

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The ghosts of FORT PECK

A 1934 photograph, above, of New Deal shows one of the shanty settlements which seemed to spring up overnight at Fort Peck to house the workers who built the huge earthen dam on the Missouri River. Left, today New Deal is just a pile of scrap timber.
In a time of drought, hunger and despair, 10,000 men came to Montana to dam the Missouri and defy the Great Depression. For many the memories are still vivid.

(If was a town built by hunger; hunger and innovative engineering changed a former Dust Bowl into a lake. Fifty years ago, the Corps of Engineers, with 50-cent-an-hour hired labor, pressed Fort Peck Dam.

Some of the government employees who still live there still remember.)

by SID MOODY
Associated Press

FORT PECK — The waves from a lake where no lake should be slap against the rocks, but it is the ghost one hears. Ghosts of a starving time, a time of dust and larceny. Gone, now, in a footnote of history, but their monument remains: a dam. Fort Peck Dam. The ghosts built it in the days of their youth to prove that even to the Great Depression man could still hope.

It was the resolve of Franklin Roosevelt that, if there were no jobs, he would create them. In 1937 the Kansas City District of the U.S. Army Corps of Engineers had listed Fort Peck as the possible site of a dam on the Missouri River to improve navigation. Build it, said Roosevelt.

On Oct. 14, 1933, he signed the authorization legislation. Nine days later, on a cold, sleepless morning, 75 men gathered to begin clearing brush on the tawdry plains. Eventually they would be 10,000. They would dam the Missouri.

It was a time of drought, of depression, of hunger. Prime grass-fed beef brought a nickel a pound.

"The dust was so bad I could see of my father-in-law was his big, white teeth," recalls Sam Richardson. "Our family hadn't had a crop in four years. When you went to lunch, the grasshoppers would graze at the salt from your hands if you ITECH on your pitchfork. Anyone who could get out did.

"I went to that movie 'Grapes of Wrath' and a guy said, 'Who do they think they're kidding? Nobody lives like that.' I said 'I've lived worse than that.'"

Now there were jobs. A ragged army of hobos, out-of-work college professors, foreclosed farmers struggled toward Fort Peck from all over the country. They came by Model T, on foot, by wagon, by boxcar — "side-door Pullman's."

They made homes of packing crates, pitched tents in "Tagtown," and McCone City and Delano-Britton, U.S. Sen. Burton K. Wheeler of Montana thought Wheeler was named in his honor, but it was more likely in honor of Ruby Smith, one of those hospital-like of lady who came in from the Yukon to set up the Wheeler Inn.

You could dance with a girl for 10 cents at Ruby's or wait her out to a car or a crib out back for $3 "depending on how delinquent you wanted to be," remembers Richardson.

A beer boat was moored in the middle of the river free from regulation; being in navigable waters. You hired a rowboat for two bits to get there.

There were some who said that area of the Missouri couldn't be dammed. Beavers had tried and couldn't.

The Corps took Leo Coleman, the mayor of nearby Glasgow, up on a bluff to overlook the site and explain the project. "My God," the mayor exclaimed, "that will cost millions of dollars."

He was $172 million off.

Gilbert Atkin got the first of it, the initial paycheck — for $15 — on Nov. 9, 1933. Common laborers got 90 cents an hour, carpenters and builders operators up to $1.20.

"Put down your shovel, and they were 10 men waiting to pick it up," says Orvin Beck, now the Corps' administration director at the dam.

In summer it got up to 113 degrees, in winter down to minus-62. Trucks kept their engines running 24 hours a day to avoid freezing. Concrete was heaved when poured. Downstream dredges swept at the bottom land spewing silt up to the dam. Gradually it took shape, a 4-mile-long earth structure with a concrete powerhouse and spillway.

The shifty town took on a lived-in look. Richardson added on some packing crate rooms and built a seesaw for the kids. Dr. C.E. Loli delivered a baby in mid-winter in a but where frost was 4 feet up the wall. The beds in the bachelor quarters never cooled as three men shared one in eight-hour shifts.

"You could have bulldozer all day Wheeler and not done $3,000 worth of damage," one Glasgow native recalls. But it was home.

FDR came out twice. Photographer Margaret Bourke-White came to shoot a story that would be the cover of the first issue of Life magazine.

It was a rowdy time. Would-be Wyatt Earps took target practice at the wall in the Buckhorn Cafe. Beer was a nickel, or you could carry it away in buckets.

Drug dealers got rich selling "prescription" alcohol.

In 1939, workers noticed railroad tracks on top of the dam were getting out of line. Maj. Clark Kittrell, the assistant in charge, drove up to inspect just as a whole section of the dam began to slide. His driver jammed the car in reverse and backed off to safety just in time.

Another worker went back to his lunch pail and was one of the first to hear. Chairman Reamsen watched in awe as the 8-million-ton, 1,144-yard slide swept his drudges away. He was afraid the Corps did make up for it.

By 1937 the river was going through the spillway and a 144-mile lake began to form. In 1943 the first of two powerhouses was turned on.

Gradually the Wheelers and Delano Heights just fell in, the barge was carried away by his hit for other uses. Today New Tail is just a pile of scrap litter.

The movie theater is still there with listed picture of Sunny Temple and Clark Gable in the lobby. The Buckhorn remains, it's a small local dive.

Fort Peck, the town, is a small, trim community of 300 or so by the Corps with Johnny Karchef, chief engineer, doubling as mayor. He has to worry about residents writing Congress instead of a councilman, it being in government town, to complain about mosquitoes biting their kids or dogs dragging deer hides from the woods.

To avoid any problems with status-seekers, he keeps the houses as nearly identical as possible. Status is also a problem because, being federal employees, everybody knows how much money everybody else makes so we have to find something else to go on.

Fort Peck Lake is a miracle, itself, a lake right in the middle of a former Dust Bowl. The campers and fishermen who flock to it probably never could imagine men standing in line for the privilege of earning 50 cents an hour.

Richardson and his wife were among the few who can.

They live in a house just below the dam. Sam helped organize a reunion in 1977. Thousands came from all over the country, just as they had even before. This time, however, they came by bus and jet airliners and campers. They gathered on the lawn where, through the trees, they could see what they had done.

They were of the dam and a of them. It had nourished them in hunger, gave home to their wanderings, kept their families together in a time of despair. Now a huge arm of earth that had touched them. It was, really, the guest of honor.

"She saved a lot of us from starving," says Sam Richardson.

A bend in the Missouri River was "rebuffed" by the U.S. Army Corps of Engineers during the construction of Fort Peck Dam. If necessary, this concrete-lined spillway could accommodate flood waters from the Missouri. The top photo was made in 1935 and the second view was taken in 1946.
Ivan,

I made it back here without incident, unless you count the traffic snarl in Seattle as incident. I am almost assured of it (even when there is no "disabled vehicle" in my lanes---what the fuck is a disabled vehicle? I have wondered about this for some time. Are we giving genuine life to these machines? I don't want any "abled" vehicles in my life, so I will pretend that these euphemisms don't exist). As I crawled along the "freeway" (free? free of what, besides tolls? If so, why does it feel as though I have "paid" something?) and looked out at the sprawl I got too philosophical for my own good and some pictures from your manuscript drifted into the front seat with me. I thought about that poor bastard Jick, looking over his Montana and the insanities that had overtaken him and I wondered what in the hell a certified Seattleite of our vintage must think when they look out from a freeway that did not exist and can barely see the Aurora Bridge (which I remember as a kid---pre Spaceneedle---was the most dominant landmark, except for the radio towers on Queen Anne Hill). They must just have a sort of deep sense of panic and estrangement. But then again, maybe they don't and that is why it keeps going on as it has. The wonders of high-tech $$$ and all that it brings to us, I write with a Zenith Supersport lap-top, wondering how I wrote letters before. Ain't there no escape, pard, from the technological descent?

Thanks so much for the hospitality. It is always fun to swap stories of the strange and delirious and somehow I always learn so much when I talk to you two. Here are the promised quotes from the Erickson Papers at MHS (part of the Governors' Papers series---I am not sure if each governor has a separate MS number).

Roads:

F. J. LaMere to John Erickson 13 May 1930 (Minneapolis)

"The writer was in the position to inspect their automobiles [he runs a garage] upon arriving in Minneapolis and the condition of their cars [travelers] indicated the conditions of your roads. I could hardly travel your roads and was forced to sleep in the center of the road for three nights at three different places, due to lack of road. From all reports, your roads don't seem to be any better than they were then [1918]." "P.S.: Please advise when roads are safe for travel."
Erickson to F. J. LaMere 21 May 1930 (Helena)

"There is no use for tourists to get grouchy about this matter. . . . Eastern people ought to be willing to endure some little inconvenience for the privilege of enjoying the wonderful scenery, climate and beauty of Montana during the summer months."

Depression:

H. Stanley Thurston to Erickson 25 August 1932 (Stanford)

Thurston comments that local relief will not be able to meet the needs of the community, even though they made it through 1931 without asking for assistance. The hail did them in:

"You will witness a panorama of the most complete destruction ever wrought by hail. In the past we have always been able to care for ourselves and assist others in their despair. Our people are still courageous; their spirit is undiminished. A productive section has been laid wast by an act of Providence, and laying aside our self-esteem and facing the facts, necessity compells us to solicit your sympathy and assistance in securing the necessary aid to face the dismal months ahead."

H. B. Brooks to Erickson 11 March 1932 (Havre)

Brooks describes conditions in Hill County and then complains to Erickson:

"The Red Cross officials are planning to bring in carloads of seed potatoes from North Dakota to help us in this season of troubles. In this area potatoes are just about the only crop that has survived and bringing in more potatoes will only make the situation worse. There are many potato producers here and this will mean competition with them. Isn’t there anything you can do to stop the Red Cross from bringing in these potatoes?"

See you in January, when I am up to my ass in the Miller research and learning how to shift my driving habits from Hood River to Greater Seattle. I hope you have the best of holidays. I will be happy with Becky and Joel around the tree and Marianne in the neighborhood. Life will be different and better. See you soon.

P.S. Thurston and Brooks are both Newpapermen
Dear Ivan,

I have your letter of 9 May, and I had best get at an answer before it goes to the bottom of one of my never never files of unfinished business.

I am sure you can make something noteworthy out of Fort Peck as a theme for the durable McCaskills. The Dam was the biggest thing which happened to us in decades, and it has not been much used.

I am plagued to find that I know so little of it and the surrounding circumstances. It provided most welcome employment on a large scale in a difficult time. As the government purchased large amounts of land which the dam would cover, this provided a flexibility for many to leave and resettle elsewhere, which had been in the planning of the Extension Service for many years. The land in the Missouri River Valley was particularly thin in soil, rough in terrain, and the location, weatherwise, was one of the worst in the world. The Lake has not attracted much resettlement along its shores. Glasgow has profited, since it is at the damsite. Governor Schwinden's wheat farms at Wolf Point have held up - and he is perhaps one of your best references.

Since the water has gone down river, we have not given the lake and the area much attention. Glasgow has tried everything to get a developer for the huge army base just north of town, without success.

Mr. M. L. Wilson used his "Fairway Dam" on the Indian Reservation as a clincher in his arid land experiments. It had expert management, assistance in good machinery, seed, etc., but it still did not yield a profit in dry years. So, said M. L., if the government feels that farming on the Great Plains is desirable, it should look forward to giving assistance in some form. From then on he advocated, Domestic Allotment, subsidies, etc.

The Milk River Valley got more attention than any part of the Missouri. Bob Clarkson outlined an ancient Egyptian pattern - a large area on the plains for grazing, a smaller benchland area for raising grains, and an irrigated strip along the river for the home ranch, pasture, gardens, fruit, etc. Clarkson was county agent, and his plan was popular enough for the 4-H people to nominate him - and his name - for one of the "Victory" ships at the beginning of the war.

OVER FOR CONVENIENCE OR CONFUSION
Doig - Burlingame - Fort Peck.

My first inclination was to send you to the Extension Service which has its state headquarters on the State University campus here. However the older men who would know - and the home demonstration agents as well - but the early 1930's are long gone, and not many are still here. There is that "breezy number - A HISTORY OF THE MONTANA EXTENSION SERVICE, 1893-1974 by H. C. Burlingame and Ed Bell, Jr. Try an interlibrary loan to save $12.00. It will have some things for you.

I think that we feel that the Yellowstone Valley with its irrigation, its growing cities, its nearness to unlimited grass and feed, the shape of the future, and the Milk River Valley still as an area of experiment of large dam, vs. small dam, land management, etc. Neither has Fort Peck Dam, or Lake, or all of the problems of the Missouri River Valley.

Stop by and I'll wheel out additional wet blankets. Mrs. Cline here at Hillcrest is writing you about one good reference.

My candidates for interview are the immediate past governor, Ted Schwinden and Manson H. Bailey, Jr. of Glasgow. He has been deeply involved in the progress of the area for many years. He has recently developed a worthwhile museum in Glasgow. We were together on the Board of the Montana Historical Society for some 20 years. Vivian Palladin, former editor of the Society's magazine, whom you know, I am sure, was in journalism in Glasgow for years. She can add some details when next you are in Helena.

Don't let me discourage you. There are many emotional situations in that Bleak Missouri River Valley, and in the building and use of the dam-thing. We will all be glad to write extensively about what we don't know about the situation.

I would hope there will be room for professional county splitter - Dan McKay of Vandalia - just west of Glasgow. I took him to town to see E. K. Wheeler one afternoon, and he promised to write his story, but he didn't.

I, too, was sorry to miss the lectures. They are a must on my calendar, but I had to take a rain check this year. I hope Ed Craney was there.

We have built museums together for many years - or talked shit at least.

Best personal regards,

Cordially yours,

Merrill Burlingame
Ivan,

Perhaps a statistic for you from the morning Killings Gazette:

IT errill

Merrill

Dear Maarill--

By the time I can get around to thanking you for your thoughts and suggestions about Fort Peck sources, I already owe you another thanks--for the Billings Gazette clipping.

I've duly noted the names you suggested, and gathered a few on my own by advertising in the Glasgow Courier, so it looks as if I'm going to have to get to work on this Fort Peck idea. It's actually the second or third book in my future, but as you'll appreciate, Fort Peck and the Missouri are such monumental topics I'd better spend some years getting the material to gestate.

So, I'll be tinkering along the lines you suggested; particularly liked the Extension Service suggestions you made. Carol and I hope to get to Montana in September, coinciding with publication of my third novel in the McCaskill trilogy, Ride with Me, Mariah Montana. Will attempt to come by and give you a bad time then. Meanwhile, one more thanks--for never failing to share the Burlingame trove of lore.

all best wishes,
Dear Merrill—

Had hoped to cross paths with you when Mike Malone imported me for his Wheeler Conference a couple of weeks ago. I don't know how much any of us contributed to scholarly knowledge, but Burton K's offspring at least contributed to our comfort level as researchers with their refurbishing of the Special Collections reading room.

What I had wanted to ask you is whether the Burlingame files, mental or otherwise, hold anything about the building of Fort Peck Dam. It's a topic I'm going to try to get to in a book—probably fiction—and anything you know, or could steer me toward, on at least three different angles would be hugely appreciated. Those three perspectives are:

--the people who lived in the Missouri bottomland that was inundated by Fort Peck Lake; anything at all about who they were, what they raised, what that country was like, would be helpful.

--the in-state migrants, especially from farms and ranches hard-hit by the Depression, who became workers on the dam; reminiscences, interviews, studies of any kind are what I'm after here, to recreate their experience insofar as I can.

--any role by MSU in the dam-building, even if it was only Bozeman-educated engineers ending up working on Fort Peck; can you think of any Bozeman connections to Fort Peck, or did the federal government bring the engineers etc. in from out of state?

That's the sort of thing I'm up to, and I'd be glad to hear any ideas you might have. I realize this topic may not be up your alley—but on the other hand, the Burlingame alley takes in most of Montana. My wife and I saw the Gallatin at its nearly unbeatable best the couple of days Mike had us there; I hope it's continuing to be a fine spring.

best regards
Dear Ivan,

I will always note my name on the envelopes I send and you can simply hold them by the corner and drop them into your "round file", when you have had more information on Fort Peck Dam and Lake, then you can use.

The drought in eastern Montana is very much on Montanans' minds just now, --ten years of it, and eight northeastern counties declared disaster areas by the governor - so these happenings on the lake are prime news.

Just in case you would like to know......

Cordially yours,

Merrill Burlingame

27 July '90

Dear Merrill--

The Burlingame Fort Peck Clipping Service is exceedingly welcome. Feel free to do as much of it as you can stand!

Will be huckstering my new book in Bozeman on Sept. 12 (Country Bookshelf) and 13th (MSU bookstore); if you haven't got anything better to do, come give me a good time, how about.

best, and again, thanks.
Bringing Montana Out of the Mud

The Early Years of John Morrison, Sr.

by Theodore E. Lang

John Morrison, Sr., is a longtime Montana engineer. In fact, he is Montana's first official engineer, holding the first professional licenses ever granted by the state for engineering and surveying. Morrison came to Montana at the age of twenty. Arriving from Connecticut with his brother, Neil, in 1922, Morrison soon began attending Montana State College (MSC) at Bozeman as an engineering student and in 1927 was awarded a bachelor's degree in civil engineering. That same year he became an instructor in engineering at the college. Morrison left teaching in Bozeman in 1930 to join the Montana Highway Department in Helena full time. Serving first as a bridge designer and project engineer, he advanced to chief bridge design engineer and in 1939 became the state's chief bridge designer.

Morrison left the highway department in 1945 to go into private practice, and a year later with Joe Maierle founded the Helena engineering firm Morrison and Maierle Company, which today is active in civil engineering projects located throughout Montana and in sixteen neighboring states and internationally. Morrison still maintains a daily schedule with the company, now headed by his son, John Morrison, Jr., but it was during his years with the state highway department in the 1930s and early 1940s that he participated in one of the most extraordinary periods of Montana's highway development. Literally and figuratively, he helped get Montana out of the mud.

Morrison's fifteen years with the state highway department were a time of tremendous expansion and improvement for the state's road system. Indeed, they represented the formative period for Montana's system of modern highways. Of Montana's 8,148 miles of primary and secondary roads in 1930, for example, only 1,846 miles, less than one-fourth, were graveled; and fewer than 80 miles, less than 1 percent, were surfaced with asphalt or concrete. By 1944 most of these roads were surfaced with asphalt and only about 8 percent, less than 700 miles, were still graveled. Bridge building was similarly unprecedented. The Bridge Department expanded from a design staff of ten in 1930 to forty in 1936.
Another version of the Battle of the Little Bighorn—Reno’s retreat across the river—was drawn around 1890 by Amos Bad Heart Bull, a Lakota whose family was part of Crazy Horse’s band at the Little Bighorn in 1876.

with yourself as President. The Goodenough and Elastic Companies want an Officer [Custer] to go in Europe. It can be easily managed—if-if-if their [horse]shoes are actually the best—about which I am doubtful more than half the time.” And so Custer was to become president of a company that would attempt to sell questionable horseshoes to the very army that Custer was a part of, which was searching for a new horseshoe contractor.

The letter seemed invaluable at the time to show another side of Custer, but it never actually made it into the film. Like many of our juicier tidbits, it got dropped because of time and space constraints. However, one of our historians, Richard Slotkin, does mention that the “Goodenough horseshoes were not quite good enough.”

About two that afternoon we met Michael Moore upstairs near the entrance to the visitor center. Mike is a young man—in his mid-twenties, at most—with longish curly black hair, a black beard, bright brown eyes, and a no-nonsense manner. He is a seasonal ranger and had already left for his home in North Dakota after the tourist season but had come back to do some research and to show us around.

That cold, blustery afternoon that Mike went over the battlefield with us was interesting, if not much fun. We stopped every quarter of a mile or so, got out of the car, listened to Mike, and followed his pointing finger to the distant hills and mountains, the ravines, the valley floor, the river. Normally, I resist any discussion of that part of Montana that contains the word “bleak,” but on that day the landscape was bleak. We stood beside the car, our faces red and our noses running, as Mike explained every detail so carefully that I forgot almost everything that afternoon.

As we finally drove down toward the visitor center in the late dusk, I realized how much I didn’t know about the Battle of the Little Bighorn, and I wondered seriously if I would ever catch up enough to be of much help in writing the script. Right at that moment, as I concentrated on seeing if my fingers would ever bend again, I had my doubts.

JAMES WELCH is a Montana writer living in Missoula. He has written several novels involving Native Americans, including Winter in the Blood, The Death of Jim Loney, Fools Crow, and The Indian Lawyer. This excerpt is taken from Killing Custer: The Battle of the Little Bighorn and the Fate of the Plains Indians (1994), his first non-fiction book, produced with Paul Stekler. The excerpt is reprinted with permission from W. W. Norton & Company. © by James Welch and Paul Stekler.
Between 1931 and 1936, 380 bridges were built, and from 1936 to 1941, when Morrison headed the department, the count rose to 636 new bridges designed and constructed. Two revenue sources fueled this growth. First, federal subsidies for highways, begun in 1916, were greatly expanded by New Deal programs in the 1930s. Second, state taxing of gasoline sales, initiated by voters in 1923 at one cent per gallon, was increased with voter approval to three cents per gallon by 1926 and to five cents per gallon by 1929. Such funding sources made it possible for a small group of highway engineers to transform Montana's highway network from dirt to hard-surface roads and from sloppy river crossings to safe, dry bridges. John Morrison, Sr., was not only a part of this group, he was a leader in an effort that led to what we enjoy today as a modern, scenic, and comfortable highway system.

What follows is the story of John Morrison's youth and his early years as a professional engineer with the Montana Highway Department. It is based in part on several recent oral history interviews with Morrison conducted by the author and by staff members of the Montana Historical Society.
John Haddow Morrison, Sr., was born August 2, 1902, in Bradford, England, a suburb of Manchester. He was the first of three sons of Scottish parents David and Isabel Haddow Morrison. In 1909 his parents decided the United States would be a good place to make their permanent home. David Morrison came first to America to secure work and establish a home, and in September 1910 the rest of the family joined him in New Britain, Connecticut.  

Home was a five-room flat on the third floor of what was called a three-tenement house in an area settled predominantly by Irish and Scottish families. The boys attended the Smalley School, which sat on a ridge separating the Irish and Scots from nearby Jewish and Italian families. At that time New Britain was a checkerboard of neighborhoods settled by Swedish, Norwegian, French, and German immigrants as well as other nationalities, each set apart by heritage and culture. David Morrison was employed by the North and Judd Manufacturing Company as a machinist and toolmaker.

John worked his first job at age thirteen driving a milk team with his two brothers, Neil and David, on a five-mile circuit to pick up milk from farmers. The boys could load the twenty-quart milk cans with ease but had increasing difficulties with the thirty-, forty-, and sixty-quart containers. The trip took about five hours, and they received ten cents per trip. An important part of the work was getting acquainted with animals, particularly with the horses that pulled the wagon. A year later when he was fourteen, John went to work in the brass foundry of the same company where his father worked, cleaning up the building and cracking molds to extract the castings.

At this time John also entered the New Britain Grammar School in what was called the pre-vocational curriculum, where, besides the three Rs he learned about machine shop, carpentry and pattern drafting, basic electrical, and office work. The training was excellent. One highlight of the New Britain Grammar School was an eighth-grade English teacher who loved to read to the students. "My introduction to the fascinating and challenging profession of engineering occurred when our teacher read the book With Men Who Do Things," John remembered. "The story was about two boys invited to New York City by their uncle who was a civil engineer. According to the story, the boys spent the summer reviewing the construction of large engineering projects such as the Brooklyn Bridge, Hudson Tunnel, Woolworth Building, and the large water supply line [153 miles] from the Catskill Mountains to New York City. The author graphically and accurately described the many difficult engineering problems and their solutions encountered on these tremendous projects." The story gave John a sense of the gigantic construction projects then being undertaken in and around New York City.

By 1917 John had advanced to high school and immediately enrolled in an engineering/drafting course. The move proved fortuitous, for it enabled him to respond the next summer to a Mr. Louis A. Oldershaw, who advertised for a high school student who might be interested in working in his civil engineering and architectural practice. Over the next three and one-half years, Oldershaw acted not only as an employer but also as a teacher and guided John in areas of surveying, drafting, and detailing work.

With young adulthood came a growing urge for adventure, and in May 1922 John and his next younger brother, Neil, decided to see more of the United States. With light packs on their backs John and Neil Morrison headed west, across Connecticut and New York to Niagara Falls. They hiked and hitched rides, which was easy to do in those days. After three days of sightseeing at Niagara Falls, they rolled out their sleeping bags on the Canadian side, and, as the wind blew mist their way, they moved to the lawn of a large home nearby. The next morning the homeowner greeted them, introducing himself as the city engineer for Buffalo, New York. Following a pleasant visit, the boys were put in contact with a freighter captain, who gave them jobs and passage to Chicago. Neil was a fireman, and John was a deck hand. According to John, Neil had the better job—on four hours, off four hours—while John was handed a chipping hammer and a paint brush and pointed toward the boat. "It was at this particular time in my life when I learned that I didn't want to be a painter," John said.

From Chicago the boys headed northwest to Wisconsin and soon decided it was getting a little too far between towns. Instead of hiking, they thought about stopping to work awhile to buy a used Model T Ford, the ultimate auto in those days. They found jobs milking cows on two dairy farms just outside Lake Geneva. John remembered, "I got a pail and stool, and I watched the farmer as he was milking most of the cows by machine, but of course, he had to strip them afterwards, and there were a few cows that wouldn't stand for the machine. So anyway, I started to milk this poor cow. The farmer finished

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the other sixty-four cows, then came over and finished up the cow I was on. That poor cow should have kicked me across the barn because I sure wasn’t giving her much help to produce the milk that I was able to get. Needless to say though, at the end of two months I did become a fair milker.” By then the brothers had enough money to buy the Model T, which they did and set out again for the Pacific Ocean, their ultimate goal.

By the time they reached western Minnesota, however, the cost of gasoline had exhausted their funds, so they joined in field harvesting, pitching bundles, and pitching hay. After a month of this work they had enough money to continue their travels, and they crossed North Dakota and eastern Montana without incident. They arrived in Livingston, Montana, on October 3 and, while stopped at a gas station, asked a young attendant about heading into Yellowstone National Park. He pointed to the snow-capped mountains and advised, “You might get snowed in up in Yellowstone Park because with that snow up there, it could indicate an early fall.” So the brothers drove west, enjoying the pleasant and picturesque trip and arriving in Arlee, Montana, on October 5. It was a “beautiful October afternoon, about three o’clock, a mile or so west of Arlee,” John recalled, “and the road took quite a sharp turn to go under a bridge that spanned the Jocko River and the railroad track. The bridge was built to span the railroad, the river, and a one-lane road crowded between the track and the east end of the bridge. That was the main highway, and that is the way the roads and streets were in those days—mostly dirt, and in a very few instances, gravel.” As we got ready to go under the bridge, I saw a survey crew working on the hillside. I said to the kid brother, ‘Let’s go see what the boys are doing.’ He said, ‘Aw, come on, we want to see the Pacific Ocean.’ I said, ‘Look, I’ll flip you.’ That’s the way we’d been traveling. When we’d come to a place where we didn’t know whether to go this way or that way, we’d flip a coin to decide which way to go, as long as it took us in the general direction of north or west. I won the flip, so we went up and talked with the survey crew—a highway location party.

“While talking to the instrument man, the chief of the party, Mr. Daum, came up and stood and listened for a few minutes. He finally turned to me and said, ‘You’ve evidently done some surveying.’ I said that I had spent three and one-half years back in Connecticut with an engineer surveying, drafting, and detailing. He said, ‘Can you run a survey crew?’ I said, ‘I think so.’ He asked about figuring horizontal and vertical curves. I said, ‘I could do that.’ He then said, ‘All here is leaving at 5:00 tonight, and I need someone to run the instruments and run the survey crew while I’m out ahead flagging line. I’ll pay $125 a month and your board.’ I looked at the man and asked about my kid brother. He didn’t know about surveying but had served his time as a carpenter and was a good craftsman. ‘Well,’ he says, ‘he’s good and husky, he’d make a good stakeman; I can pay him $65 a month and his board.’ I looked at Neil, who only shrugged, and we started right up.”

The Morrison brothers held their survey jobs until shortly after the first of the year when severe weather halted such outdoor work. Snow was more than eighteen inches deep in places, and temperatures were well below freezing. The primary purpose of the job was to straighten sharp curves in the main highway. “We reduced upward of ninety degree turns [radius 64 feet] down to a maximum of twenty-eight degrees [radius 205 feet], which made the road travelable at thirty miles an hour,” John explained. “Today,” he continued, “good design endeavors to keep below a maximum of seven degree radius [819 feet].” We worked between Arlee and St. Ignatius, on to Pablo, then west from Ravalli to near Dixon, and finally between Perma and Paradise, before the weather stopped us. That winter of 1923 my brother and I were fortunate to get jobs with the people that ran the little hotel at Perma for a couple of months. In the spring Neil returned to Connecticut, and I took a job with a Mr. Bebee, an irrigation engineer in Eureka, helping survey the Glen Lake Irrigation Company’s system of ditches, canals, and
property. In May I came to Helena and took a job with the General Land Office, surveying United States land and ten miles of meander of the Stillwater River."

Thus, with skills learned while still a youngster as an apprentice in a small engineering/surveying office, John Morrison, at twenty years of age and with no formal college education, was in Montana carrying out engineering duties in surveying. So began a long career that spanned seventy years of education, public service, and private practice in the Big Sky country.

Aware of his educational shortcomings, John Morrison registered at Montana State College to begin his formal education in the fall of 1923. "They were accepting special students at that time," John said, "because there were quite a few fellows who had come back from World War I and were afforded special classes similar to what the GI Bill did for World War II veterans. To make up my high school deficiencies I took high school physics and geography, then by challenging some other courses made up the high school requirements. I graduated in 1927 [with honors] with the bachelor of science degree in civil engineering."

During summer break from school in 1925 John began his career with the Montana Highway Department as crew chief of a survey party on projects between Wilsall and Clyde Park, northeast of Bozeman, and in the vicinity of Chico Hot Springs, south of Livingston. Upon completing these jobs, the crew moved on to the Bozeman hill between Bozeman and Livingston. John recalled that the Bozeman Pass project "was under construction that summer, and we set all the final construction stakes. It was one of the larger jobs the state had let up to that time. It was also one of the last projects in Montana where horses and mules were used to draw the dirt-moving equipment. There were one-, two-, and four-horse Fresnos, the latter moving probably two cubic yards of material at a time. You had to push the lever down on the bucket, let it scoop up the dirt, and when it was ready to haul, flip up the bucket carefully or end up on the back end of one of the horses. There were about fifty people working there altogether, the contractor supplying sleeping quarters in tents, and we had a food tent and cooks. The project went on clear through the first years of the 1930s.

"Even though driving speeds were only twenty to thirty miles per hour at that time," John continued, "and the road was just bare dirt, we laid out one curve on the Livingston side of the hill at twenty-eight degrees. We also banked it. Proper engineering of curves involves a transition zone from straight, flat road to the full curve with banking, then the full curve, and finally another transition zone to straight road past the curve. Often this gets compounded by one curved section following another. The observant

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4. By 1922 only thirty-two miles of highway between Butte and Anaconda, which John and Neil Morrison followed to Arlee, had been paved with concrete in the state.

5. The intent of road design is to keep the angle change as small as practical for the topography. Greater hillside excavation sometimes is necessary to cut one or two degrees off a curve but is not done because of cost. In Prickly Pear canyon on Interstate 15 between Helena and Great Falls, some curves are seven degrees or eight degrees with elevated outside edges. It is comfortable riding to enter these curves at fifty-five miles an hour, the design speed for these curves.

6. Charles W. Wixon, Pictorial History of Roadbuilding (Washington, D.C.: American Road Builders Association, 1975). In 1885 a Fresno, California blacksmith created the "Fresno scraper." Drawn by mules the device in 1927 could move up to one hundred cubic yards of material a day for about fifty cents a yard.
driver can often spot these various road characteristics, once they are understood."

During his senior year in college, John experienced an incident that illustrates the condition of Montana roads in those years. "We decided to take a field trip and Professor Eugene Grant arranged for four of us, who were graduating that year in civil engineering, to make the trip. Like most students, we were broke, so we loaded a Model T with our gear and camped out on the trip. We first went up to Augusta, then northwest to the Sun River, a trip of two hundred miles, for a tour of the Gibson Dam, then under construction. The next stop was eastward ninety miles to Great Falls, where the Anaconda Copper Mining Company was doing a lot of work on the smelters. To return home, we left Great Falls one morning at nine o'clock. The weather was good, but it had been raining. We hoped to make Bozeman before dark, in those days a trip of two hundred miles. As it turned out, it was a quarter to nine that night when we pulled up in front of the YMCA in Helena, having covered only half the distance. On the trip we never got stuck, but the gumbo or mud of the road was at a consistency where it rolled up on the tires of the car. We'd go two hundred to three hundred feet, have to stop, and the only way to get the mud out from between the wheel and the fender was to dig it out with a tire iron and our fingers. And that is how it was in Montana in the spring in those days. We arrived at the YMCA looking like mud Santa Clauses."

Interestingly, just thirty-six years later, John, as principal in charge of the Morrison and Maierle Company, cut that same stretch of road between Helena and Great Falls as Interstate 15. One ten-mile section of the highway required six expensive bridge crossings of the Missouri River. The original route went north for six miles from Helena, then west ten miles to a town called Silver, then through Little Prickly Pear canyon where the road joined the present route at the north end of Sieben Flats. This jog increased the distance traveled between Helena and Great Falls to one hundred miles compared to the present distance of ninety miles. The old road alternately crossed the Missouri River downstream of Holter Dam and again upstream of the Dearborn River, then remained on the west side of the river into Great Falls. At Sieben Flats, fourteen miles north of Helena, weather conditions can be the most severe, with high winds and black ice that sometimes halts traffic even on today's interstate. A beautiful highway setting makes this drive one of the state's most picturesque.

With his degree from Montana State College in hand, John taught civil engineering at MSC from 1927 until June 1930, replacing Eugene Grant, who was on sabbatical leave. During these years—in 1929—John married Bozeman native Rosalie Lehrkind, whom he had met when Rosalie was assigned to the lab bench opposite John's in freshman chemistry class. John greatly enjoyed teaching, but decided at the end of three years that he needed more practical experience. So he left MSC and accepted a job with the State Highway Department in Helena as bridge designer and project engineer on bridge construction in the bridge design section.

By 1930, when John joined the highway department, the nation was in the grip of the Great Depression. In Montana poor economic conditions were aggravated by severe drought. To stimulate employment, the federal government increased aid to the states with a major emphasis on highway construction. The effect in Montana was to put many farmers on road-building crews. At the time Montana became a state in 1889, all road and bridge construction and maintenance was a county responsibility. In 1913 when the Montana State Highway Commission was established, the commission designated primary and secondary roads and made state matching funds available to the counties. Two years later the Commission established the bridge department and directed it to develop standardized plans for all bridges costing more than half a million dollars. Counties were required to raise highway funds, which became increasingly burdensome until the state gradually took over fiscal responsibility. In addition to revenues generated by a gasoline tax, at five cents a gallon by 1929, state bond issues of six million dollars in 1931 and three million dollars in 1937 provided necessary matching funds to federal grants for road construction.

These actions stimulated state highway construction throughout the 1930s and until 1941, when the federal government redirected federal dollars to World War II programs. Construction in the 1930s was surpassed only by the highway construction

programs of the 1960s and 1970s, when road design changed to four-lane, split highway interstates with reduced curves to accommodate increasing vehicle speeds and heavier construction to support larger truckloads. 9

With increased budgets, the Montana bridge department expanded from a dozen engineers to more than fifty in 1932, when John joined the group. Many of the newly hired engineers had been let go by the Anaconda Company as the mining conglomerate scaled back its own operations because of the depression. Trained basically as mining engineers, they quickly converted to structural bridge engineers with the guidance and help of experienced highway engineers. The mining engineers stayed with the highway department until about 1936, then returned to the Anaconda Company as the economy improved.

John Morrison, meanwhile, received the practical experience he had been looking for during the first three years of the depression. "I was involved in designing," he said, "and when they couldn't find field men to send out, I was sent out on a number of jobs to handle the field engineering for construction of the bridge. One was at Lima, another at Whitehall. The largest one was a bridge over the Musselshell River at Mosby, a dot on the map with one building containing a grocery store, living quarters, and a post office that served people for fifteen to twenty miles up and down the Musselshell valley. Across the river on the west side, a Mr. Busick ran a farm and had built a few rental cabins. However, when I got there the construction was already started, and all the cabins were rented. The bridge contractor had built a twelve-by-sixteen-foot, tar paper-covered office for the field engineer, and that is what my wife and I lived in from September 1932 to June 1933, up to completion of the construction."

The Musselshell bridge was an imposing structure for Montana in those times. The bridge had four spans: two truss spans that were each 175 feet long and two sixty-foot approaches, one on each end, of reinforced concrete. The highway was being laid out at the same time, and John recalled "how quickly a storm can go through the Mosby area and cause terrific runoff. The original location that had been selected for the highway crossed a dry wash called Sage Hen Creek. They ran the road up this creek for about three miles, then carried it out onto the prairie as it went on to the east. In this three-mile section, three timber bridges were built where the road crossed various loops of the dry wash. After the bridges were in place, a heavy storm hit at the headwaters of Sage Hen Creek, and all three bridges were washed out. Engineers that saw the evidence afterwards, estimated that somewhere in the neighborhood of 35,000 second-feet of water came down that dry wash. The Missouri River out of Canyon Ferry is somewhere between 25,000 and 27,000 second-feet at normal flood stage, so that gives an indication of the amount of water that came down the dry wash. Anyway, the highway department, with that physical condition, rerouted the highway on a ridge south of the creek, later crossing the creek where a major two-hundred-foot timber bridge was constructed."

With his wife from Bozeman and the family living in Helena, John recalled vivid memories of the Helena to Bozeman roadway, particularly the stretch between Winston and Three Forks, which he described as "torturous in the days before 1932." Especially after the couple's two children were born—John, Jr., in Bozeman and Helen in Helena—the family traveled to Bozeman once or twice a month, which in good weather took three and one-half hours.
An automobile skirts the edge of the Helena-to-Bozeman road in October 1921, shortly after new guardrails were installed along one side of the road east of Helena.

"The section of the old road between Winston and the foot of the hill to the east of Winston was fairly straight, but very narrow and had been surfaced with large stones six to eight inches in diameter," John said. "The road was a severe test for even the cars of the 1920s and 1930s. When you reached the bottom of the hill, the dirt road followed section lines into Townsend, then along the main street of Townsend for about a half mile, and then again on the section line from there to Toston. From Toston the road crossed the Missouri River on a very narrow bridge and followed the section line for about three miles to the west, and finally south along the section line to the top of the hill, which is approximately ten miles south of Toston. Practically all of this road in the river bottom and the valley would become impassable during wet and spring thaw weather. I've gone over the road and you'd see a fence post sticking up right in the middle of the road, and you'd know enough not to go near it because it was a deep hole. Someone had been stuck there and after they got through, put the fence post there to warn the next traveler that it was something to be avoided.

"Sometimes if you made ten miles an hour that was doing well. The seasoned traveler who knew the topography would, when heading toward Three Forks, turn off the main road before it reached the Missouri River, crossing west of Townsend, and take the unimproved road along the foothills through Radersburg and would eventually connect with the main road again three miles west of Toston. This detour avoided about sixteen miles of bad road conditions in wet weather. In any case, the trip was often adventuresome, taking sometimes five or six hours, plagued with mud and detours. A trip under four hours that time of year was considered remarkable." When the highway department decided to improve the road, the wetlands section was relocated just east of the railroad, and the roadway built up in the swampy areas, which are in strong evidence yet today.

In the 1930s highway funding was similar to what it is today. Approximately 90 percent was federal money and 10 percent from the state. "The state's share came from a three-cent gas tax," John explained. "Back then with gasoline selling for anywhere between twenty and twenty-five cents a gallon, the gas tax was a substantial addition; however, the people had voted it in. The highway department improvement plan involved about five thousand miles of primary and secondary road systems. The primary roads consisted of two east-west and three north-south arterials. One east-west [primary road] is the highline through Libby, Kalispell, Havre, Wolf Point, and Culbertson, now Highway 2, and the other [east-west road] at that time was Highway 10 through Sidney,

10. One second-foot of flow equals one cubic foot of water moving past a point in one second.
11. An example of sight distance dating to the 1930s is the section of State Highway 287 between Three Forks and Helena, south of Toston where the road contour follows the rolling hills. Sight distances of fifteen hundred feet are preferred in modern road construction based upon increased highway speeds.
12. The bridge no longer stands, personal communication with Jon Axline, April 1993.
Billings, Livingston, Bozeman, Missoula, on through Thompson Falls, and out of the state along the Clark Fork River—today Interstates 94 and 90. The road coming to Missoula from Hamilton and on up to Kalispell was one of the north-south routes [Interstate 93]. The second [north-south route] was through Dillon, Butte, Helena, Great Falls, now Interstate 15, and the third connecting Hardin, Billings, and Roundup and on up northward [Highway 87]." 

Morrison remembered how Montanans longed for better roads in the 1930s and relinquished rights-of-way readily and joyfully accepted improvement from dirt to gravel. "We tried to make every dollar go as far as we could, and this is one of the conditions, economics, that has changed considerably as environmental concerns and public attitudes come into play," John related. "Back in the 1930s and 1940s we figured that prairie roads could be built for two-lane traffic with twenty-four-foot shoulders for the main section and twenty-two-foot shoulders for lighter traveled roads. A travel lane in those days of ten feet was considered a pretty good travel lane. If you went to twelve feet, boy, that was luxury. Two-foot shoulders were considered ample, and a gravel surface formed the travel lanes. Cost would be $4,000 to $6,000 per mile. That was what we called the turnpike section where vertical sight distance [the distance ahead when a person goes over a rise] of four hundred feet was considered adequate.11 Heavy construction—that's rock work, with blasting, loading, and hauling—ran at most $50,000 to $60,000 a mile. On bridge work, structural steel ran $0.045 to $0.06 a pound and concrete ran $15 to $18 a yard. If it got to $20 a yard, we thought we were getting robbed. As a comparison, using latest figures from the highway department, the increase is significant, caused by inflation and complying with present-day [1993] standards. Concrete is $330 a cubic yard, reinforcing steel $0.34 per pound, and highway construction costs average $700,000 per mile for primary highways and $500,000 per mile for secondary roads. 

"The materials of construction were also a major consideration," John continued. "You take lumber. We have built some bridges, probably with thirty-foot spans, and you get into some pretty heavy timber. We would use Douglas fir timber, all brought in from the coast, treated. The span usually limited the use of timber except in very special cases. We did design a timber bridge across the Yellowstone River in the early 1940s that used one-hundred-foot treated timber trusses. That was a special job because it was 

at the start of World War II, and steel was not available. They wanted the ore out of the mines south of Columbus, and the old bridge wouldn't take the trucks that were hauling it out, so we had to design a bridge that would carry one-hundred-ton trucks safely across the Yellowstone River. That is probably one of the longest timber span bridges in the state, and whether it is still standing or not, I don't know."12

During World War II Montana Highway Department activities were curtailed significantly. Between 1942 and 1944 only forty-eight bridges were constructed, with 75 percent of these made of timber. Several steel stringer and reinforced concrete bridges were constructed for strategic purposes.13 One bridge job that John Morrison recalled resulted in his highway department position being frozen for the duration of the war, after he had attempted twice to enter the military. "In the winter of 1942," John said, "an ice jam took the quarter-mile-long, four-span steel truss bridge out at Fallon on then Yellowstone Trail Highway 10, carrying the bridge a mile downstream and reducing it to a twisted pile of scrap. Highway 10 was designated a military highway by the war department, so we got immediate instructions to replace the bridge and were given priority on steel for the construction. My problem was having only a skeleton crew in the bridge group consisting of two designers and two detailers to help in the planning and design of the new bridge. However, with their help and conscripting Bill Jones from field engineering, we over-forty-year-olds [maximum military age was thirty-eight] got it done. It required total redesign including piers and abutments and increasing the width from eighteen feet to twenty-four feet, with considerably heavier construction."

In 1935, when John was promoted to chief bridge designer, the bridge department had six design sections of squads of six men. Each squad was expected to turn out one major bridge and four or five of what were called minor projects per month. "Today it takes years to get a major bridge approved," John noted, "and it is because of all the procedures and specifications that have been incorporated into our laws. They have taken the individual decision-making out of any project in which government funding is used. For example, in the 1930s, a final review consisted of input from three people: an experienced highway engineer; an experienced structural bridge engineer; and a representative from the Montana office of the federal Bureau of Public Roads. On a fiscal basis, the highway commission, in its judgment, would have already allocated certain amounts of funds to each of the districts, and the division offices used the funds to best advantage. This setup delegated consider-

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able responsibility and commonsense judgment to the division engineers. In contrast, by 1960, on a small project between Butte and Helena, a total of twenty-two specialists were involved in a final review. Prior to this review, studies, evaluations, and appropriations in a number of areas had already been exercised, including rights-of-way, environmental impacts, materials and construction, traffic flow and signing, and so on. Just the first of these—gaining right-of-way—is a lengthy and expensive operation today.

During the 1930s Montana had five highway divisions headquartered in Missoula, Great Falls, Billings, Bozeman, and Helena. Each division office had a field engineer who would lay the groundwork on road placement and surveying. However, prior to this, preliminary inspection was required by representatives of the road department and of the Bureau of Public Roads (BPR) whenever federal funds were involved. Louis Martin was chief engineer of the BPR, and Ralph Raeder was Montana chief highway engineer. The bridge department was directed by B. J. Ornburn, and R. A. Stevenson was in charge of bridge construction. George Poore directed the road department, with Fred Quinell in charge of road construction.

John recalled a story Paul Johnson, an engineer with the highway department, told him that illustrates well the highway department's seat-of-the-pants production orientation in the 1930s. "Paul knew very little about road surfacing and preparation of the road mix consisting of gravel and asphalt mixed in proper proportions so that when it was spread in a layer three or four inches thick and compacted, it would make a good roadway surface," John explained. "One day he [Paul Johnson] was assigned to oversee the paving of two quarter-mile approaches to a new bridge that had been constructed. Paul showed up, and the road crew had finished grading the approaches and were working a mixture of gravel and asphalt road-oil material to prepare it for the surfacing. After working the material, he asked the crew to windrow it at the sides of the roadway, not knowing if the material was in a correct mixed condition or not. That afternoon Ray Percy, maintenance engineer, showed up, and Paul asked him what he thought about the mixed material. Ray reached down and took a handful of the mixture, squeezed it, and watched it spring back, saying that it might be slightly dry. Later, Bill Wilcomb, division engineer for Great Falls came by. When asked by Paul about the mix, Bill reached down and squeezed a handful and concluded it might be a bit too moist. Finally, when Louis Martin, with the BPR, came by and did the same test, he told Paul it seemed about right, and Paul simply stepped aside and signaled the construction crew to go ahead and pave."

Today asphalt is pre-mixed at a batch plant and is trucked while still hot to the road site where it is spread and compacted with a roller immediately. As John Morrison explained, the procedures were different in the 1930s. A well-constructed roadway in those years offered a hard surface of a six-inch to twelve-inch base layer and a three-inch to four-inch surface layer. The base layer was pit-run gravel, ranging from fine sand to rock up to two inches or three inches in diameter. When put into place this base material might be sprayed with water, depending upon conditions, and compacted. On top of this up to two inches of additional pit-run gravel was spread out and sprayed with road oil. The layers were thus mixed, using a road grader until the fine sand mixed enough with oil to have a spongy consistency. The process was then repeated with another one-inch to two-inch layer. When this three-inch to four-inch surface layer was "just right," it was spread out evenly with a road grader and compacted with a roller or a loaded wide-tired dump truck.

Bridge work, meanwhile, is considered a specialty in a highway department. Bridges may be constructed of timber, reinforced concrete, or steel. When John headed the design section, he was expected to visit the proposed site and take field notes on the stream crossing, which might include consideration of an adjacent railroad track. He would then give his notes to the squad leader. In three or four days the group would have two or three potential layouts, with cost estimates for each. The first question to be answered was often whether there was a good reason not to take the cheapest layout. The factors involved frequently were complex.

"For example," John explained, "in a major stream, where do you put the high-water line, especially if the land on one side is steep and on the other side is flat country? Your high-water line might go a mile out onto the flat area and on the other side it stops real sharp. On the flat side, how far out does the bridge extend on the flood plain? We do have certain ways and means of figuring. How much a shorter bridge is going to affect the upstream people, and our hydrologists go through the gymnastics and come up with an answer on that. If the constriction is too severe, then we could be fighting that stream from here on out—erosion of the embankment, debris or
ice buildup, and so on. Sometimes we give the stream a clear flowing channel, sometimes we can put three or four piers in it. Usually each bridge design was enough different that we couldn't use a previously used design. Back in those days we made the decisions. Today, holy smoke! The environmentalists, the Fish and Game [department], the Soil Conservation Service, the Flood Control people, everybody has their input, and it takes years to get the job done. We were fortunate. We would talk over the various layouts and decide which one to recommend. Louis Martin [with the federal BPR] would get called in, and we'd say what we thought, and if Louis didn't have any suggestions, that was it. That's the way decisions were made and that's the reason we were able to get the state out of the mud. And that's no exaggeration!

From its small beginning in 1915, the bridge department grew steadily until it reached its peak number of employees in 1935 and 1936, the same years the biggest building program of the period was at its peak. Thereafter, due to curtailing of funds for construction, the department gradually shrank in size until the threat of war became so real during the 1941 construction season that many of the personnel left to enter work that appeared to be more vital to national defense.14

According to John, every project was a challenge of one sort or another, and it is thus difficult to single out a "best case." He recalls one special project in 1937, however, when bridge construction was a major activity across the nation and competition for awards was fierce. Nonetheless, the bridge built at West Glacier across the Middle Fork of the Flathead River was awarded first place in national competition for what was classified by the American Institute of Steel Construction (AISC) as a Class C bridge, that is less than two hundred feet long. It was the first time that a Montana bridge received recognition by the AISC.

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When it comes to special challenges, John remembered the bridge across the Flathead River just east of Kalispell. "This deck structure bridge had poor foundation material, to say the least. Joe Maierle, later my partner in our engineering consulting firm, who I first worked with in 1930 when we were both in the bridge design section of the highway department, did foundation investigations on many of the large bridges. On this particular bridge site, the drilling rig was bringing up chunks of wood from a hundred feet below the bottom of the stream out of the silt, sand, and glacial till that is there. That whole valley is filled with glacial material all brought in eons ago when glaciers covered this whole area. So when we started to construct the bridge, the plans called for untreated timber piles, which, when driven to a hundred feet, were still going down fairly well with each hammer blow. At this point, R. A. Stevenson told the boys, 'All right, let's let them set up for a couple of days and see what happens.' During that period, the mud and silt and sand, whatever we were carving through, settled back against those pilings. When they tried to drive the piles later, the driver could not move them. That was a case where a lot of good judgment was needed. We probably could have driven pilings for many more feet because that foundation mate-
rial was the same to a depth of about eight hundred or nine hundred feet. This bridge, after fifty plus years of use, is still giving good service."

Although John hears criticism of highway department work on occasion, he declares: "I can’t conceive of anyone saying that the work that was done in the 1930s was unnecessary, any of it! The system of roads and highways eliminated many previous life-threatening hazards. I’ve seen the time when [traveling] from Helena to Butte was at least a three- or four-hour trip. Under certain conditions on those Elk Flats, boy, it’s been pretty rough up there, and going over the Boulder hill was a major operation at times, sometimes practically impossible. I won’t say that with the number of miles that were built, that if we’d had the money, we could [not] have done a better job than we did. But money was a big factor. For example, when we designed the bridge across the Missouri River at Townsend, they restricted the width between the curbs at twenty-two feet, while good design would have indicated a minimum of twenty-four feet, but it was money that was the factor. The bridge was widened, and the design has worked out for full use up to the present.

"I don’t think we have to apologize for anything the highway department did in the 1930s. It was done in good faith and by men who were pretty solid, commonsense people. That’s the thing I’ve always admired about the men I worked with in those days. Look at the size of the state of Montana with the population we’ve had in the state. When I first came to the state in the 1920s we probably had 650,000 people, or thereabouts, and today it’s around 800,000. Economics has always been the big factor, and I admire the people of the state and will always remember when we first passed the three-cent gas tax. I didn’t even own a car then; I think I was going to school when they passed that, or maybe I was teaching. So to me it was really something in that time when they voted it in. People today in Montana want the best, but it’s always got to be considered in light of the costs versus benefits involved."

If a search were made for a modern frontiersman, one who has been intimately involved in advancing the welfare and safety of the populace in Montana, a good case could be made for John Morrison, Sr. Short in stature, not husky like his brother Neil, John has cast a long shadow of technological advancement across the entire state. Soft-spoken, congenial, with purpose of mind and action, John has been one of a select team of engineers who with resolve, commonsense, specialized knowledge, and skill have brought Montana’s infrastructure into the twentieth century. What has been gleaned from Morrison’s early years of public service is only part of the complete story, which logically extends into many more years of private consulting.

It is a legitimate claim that not all of Montana’s pioneers lived in the nineteenth century nor homesteaded the high plains in the early twentieth century. As John Morrison’s experience well illustrates, there have been pioneers in other ways—heretofore less visible perhaps, but nonetheless quite significant—including the creators of the state’s highway infrastructure. John exerted influence on conceptualizing—as well as supervising—actual construction of Montana’s transportation system. That system, although improved, continues as the basic network for present-day transportation.

Of all the technological innovations since the birth of the Nation, the automobile had the greatest impact on America and the American way of life. Within a few decades after its introduction, it had driven horse-drawn vehicles out of use; destroyed the intra-urban electric street railways; cut sharply into railroad traffic; vastly increased the mobility of people; stimulated vast expenditures for highways. [Gene Dallaire, Civil Engineering History: The Story of America’s Transportation Revolution (New York: American Society of Civil Engineers), 86]

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Government Patronage

Catlin, Stanley, and Eastman

by Brian W. Dippie

On July 20, 1852, the United States Senate debated the latest in a series of resolutions calling for the purchase of George Catlin's Indian Gallery—a collection of some 607 portraits and scenes painted among the western tribes in the 1830s. Uninterested senators were inclined to drowse or grouse about wasting time whenever the arts and the government's responsibilities to them—patronage, in short—came up for deliberation.

At mid-century there was a rough correlation between section and party and one's stance on such issues. Southerners and Democrats, given to a strict constructionist reading of the Constitution, tended to consider art outside the federal government's legitimate jurisdiction, while northerners and Whigs tended to be more sympathetic. On the whole, congressmen generally regarded artistic patronage as a minor concern at best for a government with pressing issues before it—notably the controversy over expansion of slavery into the newly acquired western territories. Indifference, then, coupled with haphazard support in the absence of any systematic policy towards the arts, made the rivalry among artists for what patronage there was all the more desperate and all the more bitter. Thus, an electric moment occurred during the debate on July 20, 1852, when a senator introduced a brief letter written by artist Seth Eastman to artist John Mix Stanley. The letter read in its entirety:

Having been requested by you to express my opinion as to the comparative merits of yours and Mr. Catlin's paintings of the Indians of this country, it affords me pleasure to say that I consider the artistic merit of yours far superior to Mr. Catlin's, and they give a better idea of the Indian than any works in Mr. Catlin's collection.
DIVING OPERATIONS

Diving operations on the Tunnel Inlets Reconstruction work started September 18, 1939. On this date the Diving Barge was moved to the site of the work. The Government diver made the first dive on the same day the Barge arrived, inspecting the Apron and End Wall of the South end of the Structure, as well as testing the air supply equipment.

An unusual amount of diving was necessary on this job due to the fact that it was impossible to maintain the level of the lake lower than 2070, which is only 15 feet below the top of the 55 foot Structure. This required the construction of a cofferdam which in turn required divers for the underwater preparations. Due to the large percentage of suspended solids in the water, visibility for underwater work was very low. The work was carried on, therefore, in nearly total darkness. Three 1000 watt underwater lamps were on hand, but it was found that the light would not penetrate the muddy water sufficiently to make their use practical.

It was first estimated that 12 divers would be needed for about 20 days at a cost of approximately $20,000. Invitation for bids circulars were sent out Sept. 7 to 84 dealers. Fourteen bids were received and were opened September 18. Bids which were accepted ranged from $85 per
day reduced to $75 after the first 10 days to $48 per day. The low
bidders were given preference of the work and overtime. One day con-
stituted 4 hours work. Overtime was paid at the divers' same hourly
rate, and no more than 4 hours overtime could be made on any one day.
Divers were on call 24 hours a day ready to work on 2 hour notice.
Idle time was given at the rate of $15 per day when a diver was not
called for duty due to lack of work. However, when the diver was order-
ed dressed and ready for work, he received full pay even though he did
no work. No diver stayed in the water longer than 4 hours at a time.

Each diver was required to furnish his own tender, whose duty it
was to dress the diver, aid him in getting in and out of the water, to
stand by while the diver was in the water and feed out hose or pull in
slack as necessary, communicate signals and directions to the diver by
telephone connections, and enforce all possible safety precautions
effecting the diver.

Each diver was required to furnish, in addition to a tender, his
own personal equipment including suits, helmet, hose, weights, diving
shoes, life lines, and telephone equipment. The government furnished
the compressed air, the compressor operators, and the laborers necessary
for lowering tools and materials to the divers under water.

First to arrive was a contractor-diver and his three divers on
September 23 from Portland, Oregon. All of the other divers were indivi-
dual contractors. The first two of these individual contractors arrived
September 29, one from Duluth, Minn., and the other from Norfolk, Virginia. On September 30, one reported from Chicago, Ill. The last diver arrived from Detroit, Mich. October 3. This brought the total to 8, not including the government diver. It was decided that 8 divers would be sufficient to carry on the work satisfactorily instead of 12 as originally planned.

The suits used by the divers were made of solid sheet rubber between two layers of tanned twill. They had an outer collar of thick vulcanized rubber, which was clamped to the corselet to make a watertight joint, and an inner collar, or bib, of the same material as the dress which pulled up, inside the corselet, around the diver's neck, so as to form a trap or pocket to catch any water that leaked in at the corselet joint and prevented it from running down inside and wetting the diver. The cuffs were of vulcanized rubber, fitting close to the wrists forming a watertight joint. In order for the diver to get his hands in and out of these cuffs, it was necessary for him to soap his hands first.

The corselet was a metal breast plate which connected water tightly to the rubber dress below, and the metal helmet above. The lower rim of the corselet carried studs which passed through corresponding holes in the rubber collar of the dress fitting over the rim. Metal straps curved to the shape of the corselet rim, and pierced so that the studs could pass through them, were laid on top of the rubber collar, and, when forced down by butterfly nuts working on the studs, clamped the rubber collar against the corselet rim to make a watertight joint.
These corselets carried an interrupted thread on their upper rim to which the helmet screwed, the joint being made watertight by a large leather washer sunk in a recess in the neck of the corselet.

All helmets used on the job were essentially alike. The body of the helmet was made of tinned copper carrying at the neck a brass ring in which was formed the female interrupted thread to engage with the male thread on the neck of the corselet, so that the helmet could be screwed on with one-eighth of a turn. At the back of the helmet was a small hinged stop-pin intended to engage in a recess at the back of the corselet, so as to prevent the helmet from becoming accidentally unscrewed. In the front, level with the wearer's eyes, was the "front glass" about 4 inches in diameter and half an inch thick. Some were arranged to unscrew, some to turn back on a hinge, while the newer type were fastened permanently in place. At the sides were fixed oval glasses protected with brass guards. One of the helmets was fitted above the front glass to give an upward view.

At the back of the helmet or on the corselet in some cases, was fixed the non-return inlet valve, through which air from the pump entered the helmet. Air coming from the pump easily lifted the valve and entered the helmet, but none could pass from the helmet back through the air hose. The object of this arrangement was to prevent injury to the diver in the event his air hose was cut or seriously damaged, or some accident happening to the pump or compressor.

The foul air escaped through the outlet valve which was fixed in such a position as to be behind the divers' right ear when the helmet was screwed on. This also had a non-return valve which worked in the
opposite way to the inlet valve and, while allowing the air to escape from the helmet, prevented water from flowing in. The amount of air flowing out was controlled by the diver operating a screw regulator.

Some divers wore rubber overshoes on their feet. The others wore regular diving boots, the lower part of the boot being a brass casting shaped to enclose the foot; the upper part was of leather and renewable. These shoes weighed about 15 pounds each.

Also part of the divers' equipment was a wide leather belt which buckled around his waist with straps that went over his shoulders. Several lead weights were attached to the belt, making the total weight about 100 pounds.

The telephone was an essential part of the equipment, being so equipped that the diver and tender could talk with each other while the diver was under water. The nature of this job required a considerable use of the telephone in order that the diver have the proper tools and materials lowered to him when needed and when setting beams and concrete forms to enable the tender above to give the proper signals to the crane or dragline operator. In most cases the divers wore leather caps which pulled down over the ears with the receivers imbedded to fit over the ears. The diver's transmitter was fastened to the inside of the helmet. The hose, life line, and telephone cable were all taped together. The tender had similar equipment except that his transmitter was carried either in his hand or rested on a breast support for convenience. Some of the older model telephones required as many as 12 dry cells while the newer models operated as well on 1. Difficulty was
encountered with wires in the cables breaking occasionally at the point where the cable entered the helmet. Some trouble occurred with the transmitters also requiring the services of an electrician quite frequently.

Some divers wore stout canvas overalls over their suits to protect the suits from becoming chafed.

Divers wore several layers of heavy wool underwear underneath the dress for warmth.

The water became very cold during the last few days of diving causing the divers' hands to become numb. Divers then found it necessary to wear gloves. These gloves were made of the same material as the dress, some being a mitten shaped affair with the four fingers together and some had the four fingers separated in twos. The method of attaching these gloves was by placing a grooved metal band inside each sleeve of the suit at the top of the cuff, pulling the gauntlet wrists of the gloves over the cuffs and the band and clamping another metal band mating with the one inside the suit around the whole. This made the connection of the two watertight. Some divers removed the rubber cuffs of their suits so that it would not be necessary to remove the gloves to get in and out of the suit.

The main objective in the reconstruction work requiring divers was that of increasing the size of the Front Wall and eliminating the vertical trash rack system. This may be seen on Drawings FP4-10-73 and FP4-10-74. The plans called for the construction of two cofferdams, namely, the North Cofferdam and the South Cofferdam needed to hold back the water while the additions were being made to the structure.

The South Cofferdam in conjunction with a bulkhead constructed
OLD FORT PECK

Old Fort Peck was formerly located on the west bank of the Missouri River about one mile above the present site of Fort Peck Dam (Montana).

The stockade was built in 1867 by Abel Farwell, member of the firm of Durfee and Peck who operated several trading posts along the Missouri River.

In 1871 the Milk River Indian Agency was moved to Fort Peck from its former location at the mouth of People's Creek on the Milk River. This Agency represented the Assiniboine, Brule, Teton, Hunkpapa and Yanktonai Sioux Tribes. Thus the stockade remained a combination trading post and Indian Agency until 14 July 1879 when the Agency was moved to the Poplar Creek and the trading post abandoned. It was not until 1886, three years before Montana was admitted to the Union, that the Fort Peck Reservation was established, having been named in honor of Colonel Campbell Kennedy Peck of the firm of Durfee and Peck.

As the name of Fort Peck has been so closely associated with the section of the country where now stands the largest hydraulic earth filled dam of all times, it was only natural that the name chosen for this project should be Fort Peck.

The principal reason for the abandonment of Old Fort peck was the fact that the Missouri River was gradually washing away the ledge upon which it stood. The exact time at which the Old Fort crumbled into the river is not known, but is believed to be just before the turn of the century.

Old Fort Peck was never an Army Post and was not properly located to serve for military purposes. It was set on a comparatively narrow ledge of shale about 35 feet above the river level, its rear wall abutting the hillside.

A visitor there in the seventies wrote that the front of the stockade was so close to the edge of the ledge that there was barely room to turn around with a team and wagon. It was, however, close to the river and possessed a good wharf so it served as a convenient steamboat landing for the sternwheelers which in those days made frequent trips as far upstream as Fort Benton.

The stockade was about 300 ft. square with walls 12 feet high of cottonwood logs set vertically, with 3 bastions and four gateways on the front and two bastions on the rear. Within were various log buildings including quarters for the men, storehouses, blacksmith shop, stables, corral and even a slaughterhouse.

Although Fort Peck was not an Army Post, it often served as temporary headquarters for military men and commissioners sent there by the Government to negotiate with the Indians during the period preceding the historic Custer Massacre. Sitting Bull refused to attend any of these conferences but is said to have visited the fort privately on numerous occasions. He camped at one time with a large force on the Big Dry Creek about twenty miles from the fort.

Camps of the friendly Indians could be found near the fort almost any time during its existence. Their custom of burying their dead in the open on platforms of poles was unfavorably commented upon by a visitor to the fort, a missionary who wrote that his stay was made unbearable by the proximity of one of their burial platforms on the hill directly above the fort.

Picture, if you will, how the old fort might have appeared from the upper deck of a passing river steamboat. It is a sunny day in early October and a few friendly Indians have been permitted to camp on the ledge west of the fort. They, like the driver of the old ox-drawn covered wagon, have come in to trade for winter supplies. A flock of wild geese on its southward flight swings low over the fort. A stern-wheeler steamboat is approaching the landing and a crowd has gathered on the wharf to welcome her.

Thus it was in the days of Custer and Sitting Bull. Today nothing remains.
Fort Peck: An American Siberia

By JAMES RORTY

At Fort Peck, in northeastern Montana, the army engineers are building the biggest earth dam in the world across the Missouri River at a cost of $72,000,000. It is one of the more ambitious projects of the New Deal, but there are voices crying in the surrounding desert to say that this mighty project, so far as the workers employed on it are concerned, falls far short of fulfilling the Roosevelt promises.

What do they say, these voices of shovel runners, pile-drivers, truck drivers, cat skinners, carpenters, and plain pick-and-shovel laborers? They say—their voices are loud, profane, and bitter when you talk to them face to face as I did—that Fort Peck is an American Siberia. They say that they are exiles—overcharged and hustled about by the army, chiseled by profit-hungry contractors, helpless and desperate. I quote the Fort Peck Project News:

The New Deal as exemplified on the Fort Peck project is a ghastly joke. There has been this result. Every sanctity of human rights has been violated by the army and its greedy partner. By their "Soviet" decree citizens are told where they must sleep, where they must eat. Families have been torn apart and the people's spirit has been undermined. The countryside has become a paradise for the honky-tonk . . . and kindred vice mongers.

Is it the model community of Fort Peck of which the editor is speaking? The Spotless Town you saw in the rotogravure sections as proof that the President's great dream of planning was being fulfilled? Yes, and the town is really spotless, much as described. The only trouble is that the workers can't afford to live in it, couldn't afford to even if they were single, which three-quarters of them are not, couldn't afford to even if the Spotless Town provided adequate accommodations for families, which it does not. Where they want to live, where hundreds of them were living when I was there, where they must live if they are to live with and support their families, is not the Spotless Town of the Fort Peck Reservation, but New Deal, Wheeler, Midway, Park Grove (there isn't any park), Lakeside (there isn't any lake)—a sprawling, malodorous slum-in-the-desert which you have never seen in the rotogravure sections and the like of which has probably never been seen in America before.

The army is loath to acknowledge responsibility for these mushroom towns, which it regards as unwanted nuisances. So early last year the army ruled that 80 per cent of the 5,000 men then employed on the project must live in Spotless Town. Immediately the workers protested. Live in Spotless Town? At what price? A common laborer works forty hours a week on the dam at 50 cents an hour. But he doesn't work every day, so that when he is obliged to pay a minimum of $8.40 a week for board and lodging in the barracks, about half of his earnings are spent for his personal subsistence. What happens to his wife and children? They go on relief and the worker goes to the honky-tonk, as I was assured by the social workers in the cities I later visited.

The workers' protest was the more bitter because they were already established in their pitiful towns before the army's barracks were completed and the army's dictatorial decree moving them to Spotless Town was issued. The protest, made through mass-meetings and in petitions to Senator Wheeler, finally brought action, and Secretary Davis withdrew the barracks order.

The mushroom towns around Fort Peck are unsanitary, dangerously located, many of them, on the flats of the Missouri River, and the insistence of the army that they be vacated would be entirely proper if adequate substitute accommodations for families were offered on the reservation at a reasonable price. Spotless Town, on the plateau above the river, has excellent water and sewage and plenty of room for expansion, and there has been time, since the pioneer period, for the building of adequate family quarters. When I asked why that had not been done, I was told that the army did not wish to encourage permanent residence on the dam site, since the permanent staff required to maintain the dam when completed will be small, and since there is no other source of employment in the region.

Over three-quarters of the workers on the project are married men with dependents. They have to be in order to get jobs—the Montana law establishes this preference in order to accomplish a maximum reduction of the relief load. But the housing built by the army provides accommodations for 3,456 single men in bunk houses, and temporary and permanent residences for only 300 families. So that there just isn't any place in Spotless Town for a workman with a family to live. Even the married civil-service employees can scarcely afford to live there. I talked to one of them who paid $35 a month for a five-room bungalow; fixed charges for water, gas, electricity, garbage removal, and garage brought this up to nearly $50 a month.

The army, of course, has its official explanation of these contradictions. Traditionally, a construction job in the wilderness is a job for single men and men who are prepared to abandon their families during the period of employment. Didn't the army post warnings in railroad stations and post offices that there were no accommodations for families on the reservation? It did, and the families came anyway. The reemployment service, in obeying the law, was giving preference to family men. But the army, obeying either its tradition or its instructions, set up barracks for single men on the army model. In the army, privates and corporals don't rate wives. At Fort Peck, not even a construction foreman rates a wife; Spotless Town offers him only a room and board at $40 a month.

There is another explanation of the charges. The cost of housing in Spotless Town has to be amortized over a period of four years when the dam will be completed. By whom? By the workers who are forced to use and pay for that housing. Why in four years and why by the workers? Ask the army, or better still, ask Secretary Ickes. Personally I doubt that the army is particularly to blame—it is merely executing orders. The same thing goes on at
Grand Coulee, where the Reclamation Bureau is in charge.

But it is a rather ghastly joke just the same and it didn't get any better when I came to investigate the mushroom towns which the workers built to escape the chase and the poverty and weakness of Fort Peck's "Spotless Town," which has been destroyed. A couple of the townships are one-room shacks built of celotex and barn siding; some of them are automobile trailers and tents; others are half-timbered holes dug in the hillside as it rises from the flats of the Missouri River. There is no sewer system; every now and then the county health officer, reinforced by a sanitary inspector paid by FERA money, comes around and condemns some of the outhouses, also some of the shallow wells, which are the sole source of water.

The county was without funds, but the health officer sought aid from the state, which, being also broke, sought aid from the FERA. Eventually it got enough money to pay the salary of the sanitary inspector already mentioned, but when I was there neither the county, the state, the PWA, nor the army had managed to achieve the obviously necessary preventive measure of inoculating the children of New Deal, Square Deal, Wheeler, and so on, for typhoid. The county health officer did his best. He obtained inoculations at cost from the state health department and offered three shots at 25 cents a shot to the parents of the mushroom towns. But there were few takers, because the workers simply couldn't afford the 75 cents.

Spotless Town has a clinic, well-administered so far as I could learn. The larger mushroom towns have attracted a few doctors, osteopaths, and painless dentists. The doctor in Wheeler told me that the week before he had been hurriedly summoned at midnight to one of these eight-by-twelve pulp-board shacks. It was occupied by a man, his wife, and two children, one four years old and the other two. The children were sleeping on a shelf. The woman was in labor. Not wishing to make a delivery by the light of a pocket flashlight, the doctor succeeded after much difficulty in securing her admission to the hospital at Glasgow. I was told of a two-room shack occupied by two couples, one with four children and the other with two; there were also two men boarders. I myself saw shacks where there was only slightly less congestion.

When the exiles of the Fort Peck project started naming things, the first name they considered for New Deal was Paradise Valley. It is a queer paradise indeed. And the irony of it is that even New Deal gives them a better deal than the deal they get in Spotless Town. It is at least human. It permits them to keep their families together. It permits them—barring the chances of illness and death from typhoid or influenza—to pay their bills, pay off a few of their back debts, and recover a little of the self-respect which idleness, insecurity, and dependence upon relief have cost them. A cat skinner getting 75 cents an hour told me that by cutting the cottonwoods of the river bottom for fuel and by other economies he was able to support his wife and two children on ten dollars a week. That, he pointed out, was better than spending almost as much for himself alone in the barracks of Spotless Town.

New Deal was less than a year old when I was there. But already it had become a parody of American civilization. It had a radio-repair shop, a movie palace, half a dozen small stores and restaurants, a real-estate office, an osteopath, a dentist, and a beauty shoppe. A couple of bunk houses contributed by the army had been converted into schools, and children living in the shack towns were admitted to the Spotless Town school. New Deal and nearby mushroom towns boasted of half a dozen saloon dance halls, and not all the taxi dancers were prostitutes. Many of them, just as on Broadway, were good girls engaged in supplementing the family income.

The people have many things to think about. They ponder over the bitter protest of the Montana Federation of Labor, whose president, James D. Graham, has charged that the earlier investigation of Fort Peck by the Public Works Board of Labor Review was a whitewash, that the contractors on the job are constantly chiseling, and that "trick" wage scales were inserted in the contracts after the contracts were awarded. It was charged at the hearing, and admitted by the Board of Labor Review, that these scales permit the employment of both semi-skilled and skilled labor for skilled workers' jobs at "helpers'" wages—rates alleged to be considerably below the level set in the contract for that type of work. This wage chiseling defrauded the workers of $50,000 in one week, according to an estimate by Graham.

In its report on the hearing the Board of Labor Review admitted that the type of chiseling protested against had been "brought to its attention from many different sections of the country." However, it declared its faith in the army's ability and willingness to remedy this condition, and closed with a hymn of praise to the uniformed engineers, who, according to the board, "have reason to be proud" of their work. Fort Peck workers don't think so.

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JAMES RORTY, author of "Our Master's Voice: Advertising," recently spent several months in the West investigating social and economic conditions.
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This February 1934 picture shows the commissary crew that fed the shipbuilders. This messhall was located in the industrial area on the river bottom. Standing left to right, Oscar J. Fogelquist, waiter; Merle B. Blaumont, waiter; Urban J. Riede, cook; Maurice Helne, cook; Leonard Johnson, waiter; William Oberg, waiter. Seated left to right: Roy Brown, guard; Leonard D. White, Warrant officer; U. S. Coast Guard in charge of mess halls and barracks; and Albred Beherndt, janitor.

In 1934 the Olympic Commissary Co., boarding contractors, set up their buildings and tents to serve the Mason-Walsh workers, the contractors who began the tunnels construction. This was located on the flat near the site of the first powerhouse.
Buttrey Foods staff in downtown Fort Peck in 1934. From left to right, George Stufvel, Rene Bur­
dett, Shirley Von Eschen, Paul Stewart, Rolland Tunney, Cecil Marsh, Russel Thorsen, Arnold Haug,
Russel Koon, mgr; Virgil Elhert.

Sandwiches are individually wrapped in wax paper and stored in a cold room until one hour prior to
service. They are then delivered to the mess huss, and placed in bins. The individual selects his own
lunch, taking as many sandwiches as he desires and helping himself to pickles, sliced onions, seasoning,
_ cake, cookies and fruit. The charge for subsistence is $25.00 per person per month except in the hotel
where more elaborate service is provided.
I. LAND ACQUISITION SECTION.

The Land Acquisition Section was organized in December, 1933, to acquire the necessary land for the railroad, damsite, reservoir, and gas line. The surveys for the project indicated that approximately 169,859 acres of land would have to be acquired by the United States in fee title for the damsite and reservoir and this area was found to be represented by 715 tracts in private and State ownership and approximately 175 acres, 34 tracts, would have to be acquired for the railroad from W iota, Montana, to the damsite.

The personnel of the section as originally organized consisted of a land agent, a stenographer-clerk and three appraisers who were local men. Soon after operations began, an attorney replaced the land agent in order to take care of the legal work involved and a board of four appraisers assigned by the Department of Agriculture replaced the local board of appraisers. As the work progressed, the section was expanded to include a second attorney, two land agents and a junior engineer. At times temporary survey parties and several Government employees who were familiar with local land values and could act as witnesses in condemnation actions were assigned to the section.

Section 511 (C), Orders and Regulations, Corps of Engineers, U. S. Army, provides that "When the owner of any land, easement or right of way shall fix a price for the same which, in the opinion of the Secretary of War, is reasonable, he may purchase the same at such price." It appeared at an early date that much of the land required could be acquired by voluntary agreement.

To assist the board of appraisers in determining reasonable prices, the section provided the following: 1. Township plats, the data for which was obtained from the effected county records and the Fort Peck Engineer Office, showing the "taking line" and each individual ownership; 2. Aerial photographs consisting of a set of contact prints, 7" x 9" in size, covering the entire reservoir area to a scale of approximately 1/12,000; and, 3. Topographic maps drawn to a scale of 1/12,000 with a contour interval of five feet on the river bottom and ten feet in the hills. In addition, an index map of the entire project on which each tract was shown and numbered was posted in the office.

The board of appraisers mapped all of the land use boundaries, all of the soil boundaries, fences, irrigation and drainage ditches and placed a symbol representing each classification of land and price in code for each subdivision on the aerial photographs. The board also made notes on each land use subdivision as to the character of the soil, vegetation and topography and on the location of graves. When the work of the board was completed on the photograph, it was given to a draftsman who determined the acreage of the classified subdivisions by means of a planimeter, the scale of which was determined from the forty-acre subdivision. If the total acreage of each land use subdivision was more than 1% in variance the land use subdivision areas were remeasured.

As the appraisal reports were received from the appraisers, contact was made with the respective landowners, who were advised relative to the
method of acquiring land and the method of and the reason for the appraisal but not to the exact appraisal value. If they indicated a desire to sell by voluntary agreement, they were asked to sign a contract which was treated as an offer to sell.

Upon receipt of the authority of the Secretary of War to purchase the land at the price offered by the landowner, steps were taken to purchase the land. When all instruments were signed by the landowner and creditors, if any, a report on the abstract was prepared, and the abstract, deed of conveyance and all papers relating to the title were submitted to the Special Assistant to the Attorney General, assigned to this project, and in turn to the Chief of Engineers for submission to the Attorney General for examination and approval.

Upon receipt of the title papers, with the approving opinion of the Attorney General, the deed of conveyance was recorded, invoices for the payment of taxes from the County Treasurer and for payment of other liens obtained, and the several invoices and vouchers for the payment of taxes, mortgages, liens and the purchase money for the land were transmitted to the Finance Section for the preparation and distribution of the necessary checks. Upon receipt of the necessary receipts, satisfactions and releases, the abstract of title was then returned to the abstractor to be continued to show fee simple title vested in the United States.

Acquisition of land by exercise of right of eminent domain was necessary in only 79 cases, 39 of which were solely because the title to the land was so clouded, either by estates, excessive indebtedness or adverse rights.

All condemnation cases were handled by the Special Assistant to the Attorney General. The gathering of factual and opinion evidence was handled by employees of the land acquisition section. Men who were acquainted with local conditions and who had extensive experience with farming and ranching operations were secured as valuation witnesses.

A complete map of each tract in condemnation was made by means of an enlargement of the aerial photograph and taken into the field by a topographer who mapped all cultural detail and recorded relief to a contour interval of one foot. Upon return of the photographs to the office, a draftsman inked in the actual elevations taken in the filed, all contour lines, drainage lines, fences, land lines, legal subdivision descriptions, and the outlines of rivers and sandbars. Results in Federal Court proved that these photographic maps were of inestimable value to the Government.

Easements to the number of 29 were acquired for a gas line. With the exception of 14 easements, these were acquired by voluntary agreement.

The land for the damsite and reservoir was purchased for approximately $12.11 an acre. The acquisition cost was approximately $2.21 an acre.

The land acquisition section obtained authority to move graves to nearby cemeteries or to higher ground owned by the Government from near relatives or, if none could be located, from close friends of the deceased.
After authority had been received and the County Health Officers had been notified, the graves were disinterred, under the supervision of licensed embalmers, and the original caskets were placed in boxes which had been built and stained. Upon completion of the moving, markers and fences which had been removed were replaced at the new locations, photographs were taken of the new locations and plats were made of the new locations except when the new locations were in cemeteries. Copies of the photographs and plats were sent to the relatives or friends who were requested to state whether or not they were satisfied with the work done and to the State Board of Health.

In 1936, a leasing program was instituted when it became apparent that such a program covering lands owned by the Government but not needed at present for the reservoir would be highly advantageous to the success of the land acquisition program.

II. BILLING AND COLLECTING SECTION.

At the time the Government town was to be established it was apparent that provision must be made for maintaining the accounts of the town and effecting collection from the recipients of the services which the town was to render. Due to the fact that a large and varied volume of accounting was anticipated and in order to facilitate execution of that volume, it was believed expedient to establish an accounting section within the Town Management Division.

This accounting agency, when organized in 1934, became known as the Billing and Collecting Section and effectively discharged an assignment of duties many of which are ordinarily allocated to Payroll, Finance and Cost Accounting Departments. The duties consisted of the following: Compilation of statements of account covering deductions to be made from salaries for services rendered to Government employees; preparing and submitting for payment statements of account covering services rendered to non-government agencies; preparation of statements and reports covering services rendered to Government activities; receiving payment of statements of account; maintaining individual control accounts for each service; and, preparing operating statements and reports of income derived from buildings and services at Fort Peck, Montana.

The personnel of the section varied in number with increases and decreases in employment of workers on the project. The basic positions were as follows: 1. Head of Section. An accountant, or clerk, who supervised the personnel, received payment of statements of account, sold ice coupon books, compiled reports, transferred cash to the Finance Section, originated necessary correspondence, balanced the accounts, checked all incoming and outgoing matter and performed other duties of a miscellaneous nature incidental to supervising the operation of a section of this type; 2. Original Entry Clerk. The duties of this position included checking and preparing all incoming charges for posting to the accounts, maintaining a file of each temporary residence and garage by number, maintaining a file of each person living in a temporary residence or apartment and occupying a garage in the form of a card voucher used for posting charges to the statement of the individual, maintaining a case file of each person living in Government family
DAM BLUES
by M. K. BARBEE

Tune: "Chisholm Trail"

I had a nice home
Away down East
Working and starving
On the federal relief.

I raced five months
And eat a ton of dirt,
I wore out my shoes
And threw away my shirt.

Chorus:
Move along dam workers,
Move along, move along,
Move along dam workers,
Move along.

I started in the spring,
And worked 'till fall.
Made a little money,
But Ruby got it all.

I picked up the paper
Read about Uncle Sam,
About the easy money
On the Fort Peck Dam.

I started in the spring,
And worked 'till fall.
Made a little money,
But Ruby got it all.

I phoned my boss
And said I'm thru'
I will go to Fort Peck
And make a fortune too.

I quit my truck
Feeling pretty sore,
I'd work in the tunnel
Where wages were more.

What's a few hundred miles,
That isn't very far,
I made a down payment
On a Model-T car.

Mickey spoke up
Said don't look sad,
Things are looking brighter,
Smallest loss I've ever had.

I landed in Glasgow
Feeling pretty blue,
I had a long letter
Telling what I could do.

I lost my money
And lost my wife,
If I stayed in that tunnel
I'd lost my life.

He gave me a truck
With plenty of power,
Took a load of dirt
Ninety miles per hour.

So goodbye Fort Peck
I'm glad I'm thru,
Leaving lots of money here
Waiting for you.

I made two trips
I see he was sore,
The boss gave a yell,
Make a little more.

When I get home,
I'll stay where I am,
Never will mention
The Fort Peck Dam.

She's a darn tough job
I see I couldn't stay,
'Twas a six-year job
Trying to finish in a day.

(Submitted by: Deloris
Anderson, 216 E. Fourth
Plain Blvd., Vancouver,
Washington 98663.)
TO THE PEOPLE WHO BUILT THE FORT PECK DAM
The Fort Peck Corps of Engineers cordially invites you to visit the Fort Peck Dam Project features and recreation facilities.

The following recreation facilities are within 10 minutes drive from this area: Two public campgrounds, five picnic areas complete with tables, fireplaces, stoves, and shelters, four boat launching ramps, a children's playground, an unsupervised swimming beach, a trout fishing pond (constructed by the Montana State Fish and Game Department), a wildlife exhibition pasture which includes buffalo, deer, antelope, and long horn cattle. Also ask the attendant about the outlying recreation areas, and wildlife photography, migratory bird refuge. A supervised swimming pool is nearby. A nominal charge is made to defray the expense of the attendant. Fishing is allowed in the reservoir and beyond the 300 feet restricted area below the power plants in the river. A state fishing license is required.

The Fort Peck Marina is located near the west end of the project on the lake shore. Boats may be rented, docked or repaired there. Near the information booth the Lakeridge Motel offers camping and fishing supplies at their store as well as overnight accommodations. At the Gateway Inn, a famous 30's landmark, cocktails and meals are served every day with dancing to live music every Saturday night. Another famous landmark of the "Dam Days" is the Buck Horn Bar. Next door you will find That Place with unusual gifts handmade in Montana by Montanans. North of Fort Peck, at Park Grove, the Park Grove Bar and cafe is a pleasant stop. John's Lake Stop has gasoline, fishing supplies and groceries available.

Watch stock car racing every weekend at the Duck Creek Sports Club or cook your own steak in their dining room.

The facilities in the townsite include the picturesque Fort Peck Hotel, reminiscent of a Swiss chalet; the Fort Peck Theatre; The Fort Peck Market, which is open seven days a week; The Fort Peck Cafe and Drug, with Smorgasbord every Sunday and buffet every Saturday evening, and the Fort Peck Super Service Gas Station.

For your safety may we recommend: Beware of sudden weather changes while engaged in water sports. An increase or decrease of water discharge at the power plants will cause fluctuation of the river elevation. The change may occur at any time. Major changes will be preceded by a 15 second long blast on an air horn. Restricted zones are marked and you are asked to observe them as you are fishing and boating below the marker signs located on the river bank just downstream from the powerhouses.

WELCOME TO FORT PECK

1. INFORMATION STATION
2. OLD FORT PECK
3. FORT PECK SPILLWAY
4. OBSERVATION POINT
5. POWERHOUSE MUSEUM
6. LEO B. COLEMAN WILDLIFE PASTURE
7. LIVE WATERFOWL EXHIBIT
8. FORT PECK THEATRE

Fort Peck Sponsored by:

(9) FORT PECK HOTEL
(9) FORT PECK MARKET
(9) FORT PECK CAFE & DRUG
(9) FORT PECK SUPER SERVICE
(10) THAT PLACE
(10) BUCKHORN BAR
(11) LAKERIDGE MOTEL
(12) THE GATEWAY INN
(13) FORT PECK MARINA
(14) PARK GROVE BAR & CAFE
(14) JOHN'S LAKE STOP
(15) DUCK CREEK SPORTS CLUB
**FORT PECK REUNION REDEDICATION**

**FORT PECK, MONTANA**  **AUGUST 1 - 7 1977**

**PLACES TO SEE**

<table>
<thead>
<tr>
<th>GOOSE POND</th>
<th>New Deal Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>LONG HORN STEER PASTURE</td>
<td>Upper Barrack Area</td>
</tr>
<tr>
<td>BUFFALO - DEER - ANTELOPE</td>
<td>Lower Barrack Area or Hwy 249 North</td>
</tr>
<tr>
<td>SPILLWAY STRUCTURE</td>
<td>Six Miles South on Hwy 24</td>
</tr>
<tr>
<td>CABIN AREA</td>
<td>Three Miles South of Upper Information Station</td>
</tr>
<tr>
<td>OLD BUCKHORN BAR</td>
<td>Hwy 24 in Wheeler</td>
</tr>
<tr>
<td>DUCK CREEK RACEWAY</td>
<td>One Mile West of Cabin Area</td>
</tr>
<tr>
<td>OLD GATEWAY INN</td>
<td>Hwy 24 in Delano Heights</td>
</tr>
</tbody>
</table>

**DESIGNATED CONGREGATING AREAS IN KIWANIS PARK**

New Deal Wheeler Park Grove McCon City Lakeview Delano Heights

**ACTIVITIES EACH DAY**

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PLACE</th>
<th>TIME</th>
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<tr>
<td>REGISTRATION</td>
<td>Fort Peck Recreation Hall</td>
<td>8:00 a.m. - 5:00 p.m.</td>
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<tr>
<td>TOURS</td>
<td>Power House - Fort Peck Museum</td>
<td>8:00 a.m. - 5:00 p.m.</td>
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<tr>
<td>FT. PECK DAM CONSTR. FILMS</td>
<td>Community Rooms in Shopping Center</td>
<td>Starting at 9:00 a.m.</td>
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<tr>
<td>FISH &amp; WILDLIFE DISPLAY</td>
<td>Community Rooms in Shopping Center</td>
<td>Starting at 9:00 a.m.</td>
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<tr>
<td>PICTURES &amp; MEMENTO DISPLAY</td>
<td>Community Rooms in Shopping Center</td>
<td>Starting at 9:00 a.m.</td>
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**PRODUCTIONS AT THE FORT PECK SUMMER THEATRE EACH EVENING AT 8:00 P.M.**

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<tr>
<th>Friday</th>
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<td>July 29</td>
<td>July 30</td>
<td>July 31</td>
<td>August 1</td>
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<td>August 3</td>
<td>August 4</td>
<td>August 5</td>
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<td>August 7</td>
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<tr>
<td>COMPANY</td>
<td>GODSPELL</td>
<td>A musical from the Book of St. Matthew.</td>
<td>THE MATCHMAKER</td>
<td>Play that became “Hello Dolly”</td>
<td>COMPANY</td>
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<tr>
<td>A musical about marriage.</td>
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<td>A musical about marriage.</td>
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**OTHER SPECIAL ATTRACTIONS**

WOMEN’S SLOW PITCH SOFTBALL TOURNAMENT ............... August 5, 6, and 7
BARBECUE PICNIC .................................................. Saturday, August 6
DANCE AT RECREATION HALL ...................................... Saturday, August 6
CHAMPIONSHIP STOCK CAR RACES-Duck Creek Raceway ........ Sunday, August 7
CHURCH SERVICES at all area churches ..................... Sunday, August 7

Date of Rededication will be posted at registration site.

**REUNION REDEDICATION COMMITTEE**

George Nicholas - Chairman
Sam Richardson Leroy Von Eschen Jim Holmes
Janice Riley Dick Kalebjian Polly Hagen

**B & B FOODS**
For all your Grocery Needs
Stop and See
Ron, Edna Jean,
Marlene, Doug
Nashua, MT Phone 746-3471

**SUBARU**
NASHUA MOTOR SPORTS CENTRE
JIM GRONNEBERG
General Manager

**Park Grove Bar & Cafe**
Harold & Erma, Owners
On the Nashua Road in Fort Peck, MT

**BILL’S ONE STOP**
Minnows, worms, tackle, beer & groceries.
In Glasgow on the Ft. Peck Hwy.
THE MATCHMAKER

by

THORNTON WILDER

Costumes by
KATIE SCHUELLER

Directed by DAN ROGERS

Scenography - Technical
GORDON STABLER

Stage Manager - CHERYL PRESCOTT

CAST
(In order of Appearance)

Horace VanderGelder ................................................. MARK DOUGLAS MacINTYRE
Ambrose Kemper .......................................................... THOM HOFFMAN
Joe Scanlon ............................................................. GORDON STABLER
Gertrude ...................................................................... DONNA BECKER
Cornelius Hackle .......................................................... STEVE HARPER
Ermengarde .................................................................. CATHY HANSEN
Malachi Stack ................................................................. JAMES LORTZ
Mrs. Dolly Levi ................................................................ JOHANNA WADLEYGH
Barnaby Tucker ................................................................ STEVEN BARR
Mrs. Irene Molloy ............................................................. JULIE ANNE DAVIS
Minnie Fay ........................................................................ NANCY KUNCHEFF
A Cabman ........................................................................ JULIAN RIBERA, Jr.
Waiter ................................................................................ STEVE QUIRING
Waiter ................................................................................ SHANE MOTT
Miss Flora Van Huysen ....................................................... KATIE SCHUELLER
Her Cook ......................................................................... SHERYL L. PRESCOTT

TIME: The 1890’s
ACT I
VanderGelder’s house in Yonkers, New York
ACT II
Mrs. Molloy’s hat store, New York City
INTERMISSION: 15 minutes
ACT III
The Harmonia Gardens Restaurant on the Battery
ACT IV
Miss Van Huysen’s House

Produced by special arrangement with Samuel French, Inc.

Montana State University Theatre Arts presents

Shakespeare in the Parks 77

TWO GENTLEMEN OF VERONA

July 23, 1977 at 3 p.m.

Next to the Fort Peck Theatre
COMPANY
MUSIC AND LYRICS BY STEPHEN SONDHEIM
BOOK BY GEORGE FURTH
Scenographer - Artistic Director
TECHNICAL DAN ROGERS
DIRECTOR
GORDON STABLER
Choreographer
JAMES LORTZ
Costumer
KATIE SCHULLER
Pianist
MARY KUNCHEFF
Drummer
WARREN STEVEN GAMAS
CAST
(In order of Appearance)
Robert ........................................ JAMES LORTZ
Sarah ......................................... JANE BALDWIN
Harry ......................................... MARK DOUGLAS MACINTYRE
Susan ......................................... NANCY KUNCHEFF
Peter ......................................... STEVEN BARR
Jenny .......................................... FRANCES KAY MORROW
David ......................................... THOM HOFFMAN
Amy ........................................... JULIE ANNE DAVIS
Paul ........................................... STEVE HARPER
Jo Anne ........................................ JOHANNA WADLEY
Larry .......................................... DAN ROGERS
Martha ........................................ CATHY HANSEN
Kathy .......................................... JANE PIDWERBECKI
April ........................................... JACKIE MCMASTER
Dancer ........................................ JULIE ANNE DAVIS
Produced by special arrangement with Music Theatre International

NEIL SIMON'S
Comedy with Music
THE GOOD DOCTOR
Scenographer - Artistic Director
Technical Director
GORDON STABLER
Music by
PETER LINK
Costumer
KATIE SCHULLER
CAST
THE WRITER .................. JIM LORTZ
SUPPORTING CAST
(Appearing in Various Roles)
FRANCES KAY MORROW
JULIE ANNE DAVIS
THOM HOFFMAN
DAN ROGERS
ACT I
THE WRITER
THE SNEEZE
THE GOVERNESS
SURGERY
TOO LATE FOR HAPPINESS
THE SEDUCTION
ACT II
THE DROWNED MAN
THE AUDITION
A DEFENSELESS CREATURE
THE ARRANGEMENT
THE WRITER
Produced by special arrangement with Samuel French, Inc.
**GODSPELL**

A Musical based upon the Gospel according to St. Matthew
by John - Michael Tebelak
a Maximus Production

ARTISTIC DIRECTOR - Dan Rogers
MUSICAL DIRECTOR - Sheryl L. Prescott
SCENOGRApher/TECHNICAL DIRECTOR - Gordon Stabler
COSTUMER - Katie Schueller
DRUMMER - Warren Steven Gamas
GUITAR - Jeff Pattison

CAST

James Lortz
Jackie McMaster
Steve Harper

Johanna Wadleigh
Thom Hoffman
Mark Douglas McIntyre

MUSICAL NUMBERS

PROLOGUE . . . . . . . . . . . . . Company
PREPARE YE THE WAY OF THE LORD . . . . Jim
SAVE THE PEOPLE . . . . Steven
DAY BY DAY . . . . . . . . . . . . . Jackie
LEARN YOUR LESSONS WELL . . . . . Julie
BLESS THE LORD . . . . . . . . . . Nancy
ALL FOR THE BEST . . . . . . . . Steven and Jim

FINALE . . . . . . . . . . . . . . Company

ALL GOOD GIFTS . . . . . . . . . . . . . Steve
LIGHT OF THE WORLD . . . . Tom and Company
TURN BACK OLD MAN . . . . Jody
ALAS FOR YOU . . . . . . . . . . Steven
BY MY SIDE . . . . . . . . . . . . . Kathy and Julie
WE BESeeCH THEE . . . . . . . . Doug
ON THE WILLOWS . . . . . . . . Kathy

— ABOUT THE PLAYS —

With the tremendous growth of mass media, it seems to be harder to justify the existence of live theatre. "Why go see a play when you can sit in your comfortable easy chair and watch three movies in one night?" But live theatre has at least one element that the mass media cannot compete with. In the theatre, there is a direct interpersonal relationship between the actors and the audience. The audience actually participates in the production; they become involved in a very real and essential manner in order to create a work of art. This season we invite you to join us in creating some very exciting productions.

In GODSPELL, we wish you to share a religious celebration of joy and innocence. For perhaps the first time in any media, you will meet the "uncrucified" Christ, who with childlike youth and wisdom brought truth and light into a chaotic world of babble. It is this truth which helps us transcend even the darkest of moments.

The MATCHMAKER will lend you the world of adventure where we are taught that everyone must hazard a little security to really live life. May we all encounter at some time in our lives a Dolly Levi to protect us from our own timidity.

COMPANY invites you to take a close look at the quality of interpersonal relationships in the fast-paced swinging society of New York. The age-old paradox 'Stay single and keep your individual freedom (or loneliness) or get married for the sake of company' is treated with a bright new outlook befitting our contemporary society. Although this show may be shocking to some, it depicts a very real contemporary problem which needs to be dealt with.

THE GOOD DOCTOR, by Neil Simon, takes us into the private world of the great Russian author Anton Chekhov. Chekhov wrote indepth character studies of Russian people at the turn of the century. While he insisted that they were funny, his audiences thought them profound. Neil Simon, perhaps the greatest of American comedy writers, consistently insists that his plays carry significant social commentary - his audiences find them hilarious. In this Simon adaptation of Chekhov's short stories, we have the pleasure to witness the best of men's abilities. In THE GOOD DOCTOR, we invite you to both laugh and think - sometimes not easy to do at the same time.

Dan Rogers
PAST SEASONS

1970
I DO! I DO!
OKLAHOMA
DIRTY WORK AT THE CROSSROADS
BAREFOOT IN THE PARK
HOW TO SUCCEED IN BUSINESS WITHOUT REALLY TRYING

1971
THE FANTASTICS
MUSIC MAN
ARSENIC AND OLD LACE
FIDDLER ON THE ROOF
A MAN FOR ALL SEASONS

1972
DAMN YANKEES
BRIGADOON
MAN OF LA MANCHA
CAMELOT

1973
CELEBRATION
THE ODD COUPLE
DIARY OF ANNE FRANK
LITTLE MARY SUNSHINE

1974
GUYS AND DOLLS
OF MICE AND MEN
HARVEY
CARNIVAL

1975
THE IMPORTANCE OF BEING EARNEST
BYE BYE BIRDIE
THE TEMPEST
A FUNNY THING HAPPENED ON THE WAY TO THE FORUM

1976
YOU’RE A GOOD MAN CHARLIE BROWN
LAST OF THE RED HOT LOVERS
THE MOUSETRAP
DAMES AT SEA

DAMES AT SEA
THE MOUSETRAP

DON'T MISS
THESE OTHER FINE
MONTANA SUMMER THEATRES:

Bigfork - BIGFORK SUMMER PLAYHOUSE
Billings - PETRO SUMMER PLAYHOUSE
Bozeman - LOFT THEATRE
SHAKESPEARE IN THE PARKS
East Glacier - EAST GLACIER PARK
SUMMER THEATRE
Great Falls - SUMMER SHOWCASE '77
Havre - BADLANDS PLAYERS
Helena - GRAND STREET THEATRE
Jordan - DRIFTWOOD PLAYERS
Livingston - SILVER SLIPPER PLAYERS
Miles City - THE BARN PLAYERS
Missoula - MASQUER SUMMER THEATRE
Polson - PORT POLSON PLAYERS
Sidney - GAS LIGHT THEATRE
Virginia City - VIRGINIA CITY PLAYERS
West Yellowstone - PLAYMILL THEATRE

Support from GLENDIVE:
FIRST SECURITY BANK
GLEN DIVE BAKERY
KOCH FURNITURE
MONTANA-DAKOTA UTILITIES

Support from MILES CITY
BISON BAR
MONTANA-DAKOTA UTILITIES

Support from FAIRVIEW
FAIRVIEW LUMBER
MONTANA-DAKOTA UTILITIES

Support from CIRCLE:
CHAPIN'S DRUG STORE, INC.
CONOCO SUPER SERVICE
GLADSTONE HOTEL-MOTEL
MONTANA BANK OF CIRCLE
PEAR VEY COMPANY
SAM'S SERVICE CENTER, INC.
TASTEE FREEZ

Support from RICHEY:
MONTANA BANK OF RICHEY
MONTANA CENTRAL AGENCY
MONTANA-DAKOTA UTILITIES
Old Fort Peck was formerly located on the west bank of the Missouri River about one mile above the present site of Fort Peck Dam (Montana).

The stockade was built in 1867 by Abel Farwell, member of the firm of Durfee and Peck who operated several trading posts along the Missouri River. In 1871 the Milk River Indian Agency was moved to Fort Peck from its former location at the mouth of People's Creek on Milk River. This Agency represented the Assinboine, Brule, Teton, Hunkpapa and Yanktonai Sioux Tribes. Thus the stockade remained a combination trading post and Indian Agency until July 14, 1879, when the Agency was moved to Poplar Creek and the trading post abandoned. It was not until 1886, three years before Montana was admitted to the Union, that the Fort Peck Indian Reservation was established, having been named in honor of Colonel Campbell Kennedy Peck of the firm of Durfee and Peck.

As the name of Fort Peck has been so closely associated with the section of the country where now stands the greatest earth dam of all times, it was only natural that the name chosen for this project should be Fort Peck.

The principal reason for the abandonment of Old Fort Peck was the fact that the Missouri River was gradually washing away the ledge upon which it stood. The exact time at which the Old Fort crumbled into the river is not known, but is believed to be just before the turn of the Century.

Old Fort Peck was never an Army Post and was not properly located to serve for military purposes. It was set on a comparatively narrow ledge of shale about 35 feet above the river level, its rear wall abutting the hillside.

A visitor there in the seventies wrote that the front of the stockade was so close to the edge of the ledge that there was barely room to turn around with a team and wagon. It was, however, close to the river and possessed a good wharf so it served as a convenient steamboat landing for the sternwheelers which in those days made frequent trips as far upstream as Fort Benton.

The stockade was about 300 ft. square with walls 12 feet high of cottonwood logs set vertically, with 3 bastions and four gate-ways on the front, and two bastions on the rear. Within were various log buildings including quarters for the men, store houses, blacksmith shop, stables, corral and even a slaughter house.

Although Fort Peck was not an Army Post, it often served as temporary headquarters for military men and commissioners sent there by the Government to negotiate with the Indians during the period preceding the historic Custer Massacre. Sitting Bull refused to attend any of these conferences but is said to have visited the fort privately on numerous occasions. He camped at one time with a large force on the Big Dry Creek about twenty miles from the fort.

Camps of friendly Indians could be found near the fort almost any time during its existence. Their custom of burying their dead in the open on platforms of poles was unfavorably commented upon by a visitor to the fort, a missionary, who wrote that his stay was made almost unbearable by the proximity of one of their burial platforms on the hill directly above the fort.

Picture if you will, how the old fort might have appeared from the upper deck of a passing river steamboat. It is a sunny day in early October and a few friendly Indians have been permitted to camp on the ledge west of the fort. They, like the driver of the old ox-drawn covered wagon, have come in to trade for winter supplies. A flock of wild geese on its southward flight swings low over the fort. A sternwheeler steamboat is approaching the landing and a crowd has gathered on the wharf to welcome her.

Thus it was in the days of Custer and Sitting Bull. Today nothing remains. With the filling of the Fort Peck reservoir, the last trace of the old fort has disappeared. Even the bluffs behind the fort are covered, and the site of Old Fort Peck is at the bottom of a huge man-made lake.
Malta, Mont.
July 18, 1982

Dear Mr. Doig,

Sorry I did not get around to answer your letter sooner.

About the grasshopper infestation there were so many a couple of years that the sky was a gray overcast, the sun blood red through them, how big the cloud was I do not know, most have been miles a cross, no one did much tracing that time.

I do not believe the grasshopper any faster than the wind moved them, I believe they rode on the heat waves like a glider.

I do not remember any smell with them.
the hoppers would eat holes in stem of the grain, some would keep eating one place till they cut through the stem, I have seen where they cut a inch & the corn stocks fit through.

There a lot of dead bird after the poisoning, the small birds eat the poison, sage hens do not eat grain they eat the poisoned hoppers, they may have eat clothes on the clothesline but I did not see it.

The biggest hoppers I seen were about three inches, though some guys said they seen them as big as jackrabbits & jackrabbits as big as a saddle horse, tales get kind of tall sometimes.

P.S. they put Best wishes saddle on them, & rode them
Hostages held
a second night

By FREDDY CUEVAS
Associated Press Writer
TEGUCIGALPA, Honduras (AP) — Four leftist hijackers held 28 hostages including eight Americans for the second night aboard an airliner at the Tegucigalpa airport, but the Vatican ambassador, negotiating with them, showed some optimism.

The armed guerrillas reduced their demands three times Thursday and allowed the pilot’s children to visit him on board. But the government insisted it would do no more than fly the men out of the country in exchange for their captives.

“The negotiations are on the right path,” said Monsignor Andres Cordero Lanza, the papal nuncio to Honduras, after his fourth visit to the plane since the four leftists seized it during a diplomatic flight Wednesday.

He said the gunmen were talking about going to Mexico or Panama.

The prelate said the hijackers, who on Wednesday threatened to kill Americans held hostage Gregory Bascom of the Standard Fruit and Steamship Co. and blow up the plane, cut their price from $1 million to $250,000, then to $150,000 and then to $100,000.

An aide to President Roberto Suazo Cordoba said the men abandoned a demand for the release of 52 political prisoners after the government denied it was holding any of those listed.

A crowd of 300 gathered outside the airport Thursday night demanding that the government take action against the hijackers. The government doubled the number of soldiers and police at the airport to 400 and refused to let the demonstrators onto the airport grounds.

The demonstrators left after several hours.

The U.S. Embassy said in addition to Bascom, the Americans held hostage included NBC-TV correspondent Brian Ross and U.S. Army Spec. 4 Frank Hubbard from Fort Ord, Calif., with his wife and infant son had been visiting his Honduran family.

The hijackers released 16 hostages Wednesday, including Bascom’s wife, Hubbard’s wife and child and three other Americans. The embassy said then that Hubbard also got off, but later it said the soldier was still aboard.

Government officials said the hijackers were members of the Revolutionary Popular Forces-Lorenzo Zelaya, named after a student killed by police in a 1976 demonstration. The group claims responsibility for 15 terrorist attacks in the last nine months, including machine-gun attacks on the U.S. Embassy weeks ago in which nobody was hurt.

INeVITATION FOR BIDS
The Board of Trustees of KG School District 88 & H is selling a 1971 International 66 passenger bus which can be seen at Kremml. The Board of Trustees will receive sealed bids for this bus until 8 p.m. DST, May 12, 1982. Further information may be obtained from Supt. Paul Preeshl at the KG School. Tel. No. 376-3183. The School District reserves the right to accept or reject any or all bids. (April 27, 30, May 5 1982)

CALL FOR BIDS
The Board of Trustees of KG School District 88 & H will receive sealed bids until 8 p.m. DST, May 12, 1982. The School District reserves the right to accept or reject any or all bids. (April 27, 30, May 5 1982)

U.S. may lean

toward Britain

By R. GREGORY NOYES
Associated Press Writer
WASHINGTON (AP) — With its marathon peace effort apparently in tatters, the Reagan administration is preparing to cast off its mantle of neutrality and side with Britain in its dispute with Argentina over the Falkland Islands.

A U.S. official told The Associated Press that a try to use it as leverage in one last attempt to get the Argentines to agree to his plan.

If such a strategy were successful, it would not be necessary to release the statement, said the official, who insisted on not being identified beyond a “U.S. official.”

But there was no doubt the administration had
Devon & Carol,

Hoping you had a very enjoyable trip enroute home.

On enclosing enlargements of chopper bait spreaders previously sent you in the hope that better details are shown.

Too, enclosed in local interpretation of your "fashionable words and deeds" relative to your Marine visit.

At a personal level, the meeting of the State Board of Land Commissioners of July 19th re oil/gas royalty rates was an exercise in power politics with the Board deferring their decision until the August meeting. Feel that I made a reasonable presentation.

Considering the opposition and the issues.

Keep your eyes on the sky and your feet on the ground.

Always remember no matter where you go, there you are

Yours,

Charlie Belt
I've been in business since April 19, 1938, as County Extension Agent in Richland County at Sidney. I went from Dec 1938 to Nov 22, 1943, when I came to Cascade County, where I remained until I retired at the end of 1968, now at Great Falls.

During my time in Cascade County, I appeared on KFBB radio twice a week for 38 years and once on KXGN when they started broadcasting. These programs were usually on the hour, and were focused on the largest grasshopper control program that had ever been held in the state, to try and control those grasshoppers and prevent heavy migrations to other parts of the state. That year was 1938, the year we had the heaviest program, operating 5 dipping stations in the county, with over 550 people from 550 farms working a total of 10,000 hours. The grasshopper control program ended in 1943.

The dipping stations were set up near the fields and were operated by farmers. The stations were equipped with fences and traps to catch the grasshoppers. The control program was a success, and the grasshopper population was greatly reduced.

The control program was a collaborative effort between the county extension agents, the state agriculture department, and the local farmers. The success of the program showed the importance of early detection and response to grasshopper outbreaks.

Theodore S. Fosse
Great Falls, Montana 59401
4/27/83
Further details about the whole operation can be found in my annual report, copies of which are on file in Richland County Extension Office, Bogema and those copies filed with Extension Service in Washington unless they have been thrown away for lack of space.

Somewhat similar programs were carried on in many other counties were grasshoppers were a real problem but not on the scale we did in Richland County that year. At one time the entomologist came in with a squad of men and the entomologist were impressed at the efficiency and results we were getting.

May 4 '33

Dear Ted--

Thanks very much for your helpful letter on my grasshopper questions. If I have anything further to ask as I work on that section of book, I'll get in touch with you when I'm through Great Falls this summer. Hope you've wintered well--friends in Dupuyer tell me it's been an open one.

all best
Dear Mr. Cook--

I much regret not meeting you when I was in Havre briefly last week. I tried you by phone three or four times, so either you were out of town or my timing was bad.

But in any event, many thanks for the further 'hopper material, which was waiting for me in my mail when we got home a night or so ago. I'd been reluctant to have you to go to the trouble of typing up the material, but I'm now exceedingly glad you did. There are some very useful details in what you've sent.

I did meet Bill Lisonby at the public library, and made a quick run through the Havre paper for the summer of 1939. Looking through the paper confirmed me in what I suspected, that the information from you and others who recall the 'hopper years is greatly more valuable than anything from printed sources. Again, my great appreciation for the time and effort you've spent helping me. I hope in 1984 to have a copy of this book to send you.

best regards
During the grasshopper infestations of the 1930's, the farmers of the Havre area were involved in quite an eradication program. The insects invaded our fields and pastures in swarms and devastated many fields of wheat, oats, barley, corn, etc., in a matter of hours.

As an example of how they did this, a head of wheat is held up by a rather slender shaft of straw. This shaft is smallest just below the head. A grasshopper needed only to take a bite or two just below the head to drop it to the ground. Oat and flax kernels are not attached closely to a compact head as in wheat, but are hung from a branching head by slender stems, each oat kernel or each flax ball full of seeds hanging individually. A single bite sufficed to drop the kernel or ball to the ground, beyond any hope of recovery.

After the horde had passed on to the next field the stems of straw sticking up attested to the thoroughness of the devastation. These hoppers are not the common garden variety but were of a certain migratory species who lit on a field, destroyed it, and then would take wing and move on. The noise of their flight could be heard from a considerable distance away.

It is not an exaggeration to say that a shadow was cast as they would fly overhead nearly blotting out the sun, or if they landed on a road, the sound of crackling as wheels crushed the bodies of the hoppers. Sometimes they crawled over railroad rails in their movements about and if a train passed through the swarm, the rails would actually become slippery from the juices of the crushed hoppers causing the drive wheels of locomotive to spin helplessly as the engine tried to get a footing on the track.

Another interesting but destructive trait of the pests was their habit of chewing on most anything they came upon. Human or animal sweat had a powerful attraction for them. A coat, for example, if left hanging outdoors and particularly if on a piece of machinery in the field, would shortly be chewed full of holes and left in shreds.
Traces of salt from sweat was apparently the attraction. A tool with a wooden handle, particularly if used frequently with bare hands, was another favorite article for chewing by the voracious hoppers. Such a tool was soon rendered unfit for use because the insects would gnaw away the sweaty wood fibers leaving the tool to rough to use. Another curious aspect of the horde's advance was their penchant for going in a very direct line, climbing up, over and down an object, when it would have been much easier to simply go around the obstacle. Some credence was lent to this story by the fact the insects could be found on fence posts, walls and roofs of houses, etc. If they gained entrance into a building, they would chew on various objects. In a corn field, they feasted on the corn silks, thus preventing the kernels on the ear from maturing, and by chewing through the husks to the ears and kernels. Gardens, flowers, all received the attention of the invaders, and usually only bare stems remained.

When hoppers are thick like this, the fowls of the barnyard could easily catch and eat their fill. Laying hens began laying eggs with and orange-red yolk, making one wonder if they were fit to eat. They were. One other observation concerning these devils. It behooved the farmer to literally "keep his shirt on" and the collar buttoned for if a hopper got on one's sweaty skin and particularly inside his shirt he could get a sharp bite. The hooks on their feet also give one a most unpleasant sensation as they crawled down one's neck.

This next part of the story concerns the method of control of the pest. As the problem worsened, and the areas threatened became more defined, measures began to shape up in the county seats aimed at controlling the advancing horde. We had no means of spraying them directly or otherwise and our only solution was to prepare and spread a poisoned bait. Hill County officials in Havre set up a mixing plant in the county warehouse located some little distance west of the present city water plant. Room for storage, water supply, a mixer, which I believe, was a good-sized cement mixer were available at this site.
The bait itself was a mixture of wheat bran, amyl acetate (banana oil, we called it, for it smelled like ripe bananas), arsenic, and stock molasses of the kind used in cattle feed. I do not recall the exact proportions of the ingredients used, but it was a process not unlike mixing cement, and the mixture was wetted with water and tumbled about for a few minutes in an old cement mixer and then put directly into sacks. The mixture was now very toxic and would be most effective if spread within a few hours, because the insects sucked and chewed the mash better if it was quite damp. Farmers came from miles around by team and wagon or by car or truck, loading up what was considered sufficient to go on around their fields and then hurrying home to apply it while it was most effective. Any of the mixture left over could not be kept in storage because of the danger of poisoning farm livestock and it had to be buried in the ground. Since arsenic does not readily deteriorate or is not bio-degradable the farmer had to be very careful of the disposition of any excess poison mix.

After a few days the plant ran out of bran. A substitute was needed immediately and as it happened, one was available. It was sawdust. Sawdust resembled bran somewhat in texture and would soak up water and the other ingredients. It did, however, have one serious drawback. It contained chips of various sizes and pieces of bark. Large pieces held considerable amounts of the poison, enough to be fatal to any animal that licked it for the molasses they so desired. The salty taste also appealed to them. After the loss of some animals, stockmen were very hesitant if not definitely opposed to the spreading of the poison mixture. Some bird life fell victim to the mixture, but most farmers felt something had to be done to save at least some of the crops and pastures. Great care was necessary to avoid spreading any chunks of wet mix which could readily be picked up.

To digress for a moment, a friend mentioned that several years ago a quantity of the mixture was discovered in an old shed in a farming community near Chinook, Mt. It seems that the farmer had some left over and rather than dispose of it as warned, he apparently decided to keep some, "just in case". The old shed fell apart and his stock got into the mix. This after more than forty years.
Spreading the poison mix was accomplished in several ways. If only a few sacks were to be distributed, it was reluctantly broadcast by hand. A distasteful and dangerous method, it was quickly abandoned in favor of homemade mechanical spreaders. One ingenious device employed the rear wheels, axle, and differential of some old car. Disconnected from the driveshaft, the gear case was turned so that a shortened driveshaft would point upwards in a vertical position. On the top of the short shaft a kind of paddle was attached and an old barrel was placed over it with space for the paddle to throw the poison mix out over the field. A tongue was attached so the spreader could be pulled behind a wagon or a truck.

In other devices, odd gears, sprockets, drive chains and belts were put together to turn a paddle wheel which threw the poison mix a considerable distance. These contraptions were driven by a chain and sprocket fastened to a wagon wheel if the farmer used horses and wagon to spread the bran or sawdust.

The poisonous mixture was most effective when moist and the first hoppers to die were sometimes consumed by their cannibalistic fellows. The ground was soon littered with dead, dying, and partially consumed hoppers. It was at best a risky but necessary project carried out by the combined efforts of county officials and farmers.

As I have mentioned briefly before, the project did not receive unanimous acceptance for obvious reasons. I well remember one incident in the little town of Laredo. A general meeting was called for the purpose of coordinating our efforts. All were apprehensive for our yearly income depended on control of the threatening insects. One farmer in particular, whose wheat and grain fields lay alongside another farmer's pasture lands was vehement in his insistence that the grasslands should be treated but the stockman felt he could not afford to risk his livelihood through the loss of his horses and cattle. Tempers flared and voices raised but the grain farmer eventually stated that he did not wish to have his neighbor become his enemy and an agreement was reached. In any case, the hoppers were satisfactorily contained and the incident eventually forgotten.
I think another facet of such programs should be mentioned. Many of these farmers and ranchers had had little or no contact with the study of chemistry. One farmer, when trying the application of toxins, whether for insects or weeds, was in his own words, sure that if a little was good, a lot was bound to be better. I have often wondered if he applied that principle to himself when taking a laxative. Toxicity and the compatibility of various chemicals were not generally understood, sometimes not even by the chemists themselves, since urgent need for a chemical remedy led them to offer these chemicals without thorough testing and warnings.

At about the same time another pest appeared on the farm scene. These were the non-flying Mormon Crickets, so called, a branch of the katydid family, a thumb-sized voracious insect much larger than the migratory hoppers. Like the hoppers the hordes of crickets devastated fields, pastures, etc. One striking difference was the apparent forerunners of the migration whom we referred to as scouts. At any rate that is how they appeared. If the scouts appeared and stayed, the main horde would soon follow. I am not aware of any poison being used although I am sure it was tried but may not have been found effective. However, I did see an ingenious method of trapping the pests. The landowner would plow a furrow along in front of the advancing horde; a foot wide roll of galvanized tin was unrolled and set on edge against one edge of the furrow. This the crickets would not climb, but would follow it along the furrow to the end of the metal strip where a tub or other container full of distillate or kerosene was set in the ground. Men shoveled the dead crickets out of the tubs and in some places wagonloads of dead crickets were piled on the ground. The oil or lowgrade fuel was kept replenished as long as the advance continued. This was the scene on farms in the Highwood Country southeast of Great Falls.

Just to keep things from getting dull two other devils appeared at a later time—the army cutworm and the stink bug or more correctly Say's Plant Bug. Cutworm armies crept through the soil cutting grain off under the surface and Mr. Stink Bug sucked the juice out of grain kernels during the soft or milk stage of development.

By Edward J. Cook
6 July 1982

Dear Mr. Doig,

Re: Grasshopper Poisoning - 1930's
Prohibition - Bootlegging, etc.
Illegal Crude oil Refining

With reference to your letter of May 18, 1982 on above subjects in specific question and answer form:

Q. Did the poison kill the hoppers immediately; stop them in their tracks, so to speak?

A. Yes, immediately meaning within a minute or two after partaking (ingesting) (of) the poison bait.

Q. And did it kill any sizable proportion when a cloud of them arrived?

A. The response would have to be a qualified "Yes"-- if and when the bait was applied properly in the cool of the early morning or on overcast, cloudy days when evaporation was reduced. My recollection is that some desperate, or otherwise greedy, farmers tended to over-spray when conditions weren't ideal.

Q. You mention a scar on your knee from arsenic poisoning. Was that a kind of burn, from the poison having got on you there, or what...?

A. Not in the usual sense of "burn". Rather, it would be better described as a corrosive action or "eating away" of the flesh. In my personal case, can only describe it as a reversed doughnut with so-called 'proud' flesh remaining in center (sort of comparable to a toadstool) with surrounding tissue eaten away. Personal recollection is that an arsenate of lead in liquid form was used. Know of NO instances of human poisoning that exhibited the symptoms of lead-based paint poisoning such as loss of hair, loss of teeth, or appendicitis-like pain.

Will note here that, years later, some cattle losses were the result of excess poisoned bait having been stored in old wooden granaries or other abandoned buildings and the floors having partially rotted but containing residual, leached poison and molasses which proved attractive to cattle.

Q. Returning to Question #2. Would estimate that perhaps a 90% kill rate would have been achieved with two applications under ideal conditions.

Q. Was anything done with them after they were poisoned-- that is, did they have to be shoveled or scooped up, or just let lie?

A. Just let lie. The duckfoot cultivator was in wide usage at the time and the furrows would be literally full of dead 'hoppers-- an impossible task to remove without destroying the remainder of growing crops.

Q. Did you have to take any precautions while working with, such as breathing through a handkerchief mask or anything?

A. Bandanna mask was recommended as I recall, but given the dry, drought conditions was ignored as uncomfortable as well as ineffectual barrier to the fumes.
Prohibition:

Personal childhood recollections of prohibition days center around the "home-brew" beer, bathtub gin, bootleg whiskey and "flappers" and the Charleston dancing of the late '20's and 1930 in Akron, Ohio. Arrived in Montana (Sweetgrass Hills) in 1931 and have no direct knowledge of either bootlegging or trans-border whiskey running. Research of local paper files of the Havre Daily News has been undertaken and arrangements for personal interviews are being made.

Illegal crude oil refineries:

Unable to develop anything on this subject from Havre Library files (perhaps 200 plus mile haulage made it impractical locally; more likely, a conspiracy of silence as in bootlegging or whiskey-running.)
POTENTIAL INTERVIEWEES:

INMAN, MRS. FRANCES  PARKVIEW APARTMENTS, #302, 820 4th St.
HOWSER, MR. & MRS. RALPH  "  "  #203
LAMMERDING, MR. & MRS. FRANK  "  "  #104
VERPLOEGEN, MARY  "  "  #308
STERERMAN, WILLIAM  847 8th St.  265-6547 (home)
SILVERVALE,  265-4324 (Yard Office, BN)

MORMON CRICKETS: (Phillips County—Dodson & Malta area)

TURNER, DAVID H. (& Fay?)  849 5th St., North  265-7192

RESEARCH: Havre Public Library, microfilm files of Havre Daily News, through courtesy of William "Bill" Lisenby, Librarian

Above files indexed by Mrs. Louis "Toni" Hagener

Compilation by: Mrs. Rita Long

BAIT SPREADER VARIATIONS: HORSE-DRIVEN, WHEELED TROUGH/DEFLECTOR/KEROSENE WITH DEAD HOPPERS SCOPED OUT.

MRS. GLADYS PATRICK SMITH  "SMITHVILLE"  265-8187

RAYMOND PATRICK  (farm, about 7 miles south of Havre on Beaver Creek Road, 395-4222  left hand side)

Don Connor  615 N. 11th St.  265-7243
Dear Mr. Brill--

Good gosh, thanks a lot for the fine assortment of photos. They help immensely.

It looks now as if I can make it to Havre this summer, likely July 12-13. My wife and I are leaving for Montana tomorrow morning, but have to spend the time between now and mid-July around Helena and Choteau. How about if you just hold onto your mule answers to my questions, and maybe I can get them from you in conversation when I come to town--it'd save you some writing, that way. In any event, I'll give you a call about my Havre plans when they're definite, and we'll see what we can work out.

Please do figure up your costs on the 35mm prints; you shouldn't be out of pocket on my behalf.

best regards
10 June, 1982

Dear Mr. Doig,

In your letter of 28 May, will get around to responding to your questions in some detail.

For the present, am forwarding 35mm prints of grasshopper priest bait spreaders (Towed) for your information, comment or questions, if any (please refer to Kolstad, Hansen or unknown).

Thought the plow picture might grab you for a nostalgia trip.

Meanwhile,

Yours,

Charlie

P.S. Note wooden spoke wheels and rim type.
May 13, '32

Dear Mr. Brill—

Thanks very much for your informative letter. It helps me a great deal with what I'm trying to do, which is to portray a Montana family in the summer of '39. The book will be fiction, but with elements of my own family and people I grew up around, and I do want it to be as honest and accurate as possible about that time. Hence my appeal for the 'hopper poisoning information; the newspapers of the time are full of references to the projects, but never say how the work was done.

Yes, I'd appreciate seeing the 35 mm pics of the towed spreader units, and will reimburse you for postage and film, if you let me know the total.

I think I savvy now how the poison was spread. I'd appreciate anything you'd care to contribute about its results, the aftereffects, along these lines—

—Did the poison kill the hoppers immediately; stop them in their tracks, so to speak? And did it kill any sizable proportion when a cloud of them arrived? Was anything done with them after they were poisoned—that is, did they have to be shoveled or scooped up, or just let lie?

—You mention a scar on your knee from arsenic poisoning. Was that a kind of burn, from the poison having got on you there, or what? I've never been around the stuff, and don't know its effects. Did you have to take any precautions while working with it, such as breathing through a handkerchief mask or anything?

Your mention of the farmers using crude for their bootleg stills is a bonus to me. The people in my home country in the Big Belts south of country set up stills in jackpine draws, and I may present a sort of regional picture of Prohibition-era Montana as recognizable by its bootleg fuels; pine fires in the Big Belts; maybe sidehill coal down around Roundup, probably cow chips out in eastern Montana—am I right that the smoke plumes from the crude would be dark black smoke, quite a lot blacker than wood smoke?

Again, my appreciation. Please don't interrupt any of your own work for the sake of my questions; it'll take me a good while to work on this novel.

best regards
Mr. Ivan Doig  
17021 10th Ave., N. W.  
Seattle, Wash. 98177  

Dear Mr. Doig,

Admittedly, you may not wish to hear from me for although I am aware that you have gained a reputation as a writer of note must also admit that I have not read your works.

Nonetheless, have taken note of your ad as it appeared in the Havre Daily News of 3 May in regard to grasshopper poisoning projects, 1938-39.

Was one such at the mixing level at Rudyard, Mt. At the onset, we operated as a three man crew— a supervisor, who may have been a Kenfield from Hingham; a co-worker whose name has been forgotten and myself.

The boss handled the paperwork, logistics, and payroll which suggests that the archives of the Dept. of Agriculture (in certifying costs to the State Auditor) would provide factual leads to those involved, if living and in the area.

At a time when the going wage level was $15.00 dollars a month for hired hands, the 40 cents an hour seemed like a princely sum; hence my first tour of duty, given the emergency nature of the work, consisted of 82 hours non-stop, grabbing sandwiches and coffee on-the-run. Unloaded sawdust from boxcars by hand, handling sacked bran, wrestling barrels of sugar-beet molasses and 845 lb. barrels of lead arsenic, adding water by hand from a stockwater tank and blending in a cement mixer. Believe me, my hip pockets were dragging out my tracks! After eight hours off—bathing thoroughly, boiling clothes, two hot meals and about 5 hours sleep went back to another 32 hour shift. Following that relief period, and the major urgency having subsided, the farmers or farmers' sons phased me out of that "easy money". Left with the memory and a nickel-sized scar on my right knee from arsenic poisoning. Following high school graduation (and no prospects of "marrying a farmer's daughter") decided to seek fame and fortune elsewhere.

Really, this letter is to suggest that (if you haven't already given it thought) you include a descriptive chapter to the means of field spreading the bait. Given the economic times, the various ingenuity employed by farmers in scavenging and salvaging scrap parts (combine straw spreaders, chains and sprockets; or mounting extra wheel rims to wheels for belt drives for truck-mounted spreaders). Those types are long-lost.

Still existing are the short-coupled, towed units consisting of a ground-driven, wheel-axle-differential positioned so the vertical shaft drove the spreader and/or internal paddle-arm to avoid "caking" or "bridging" of the bait within the Barrel hopper which was fed by handshoveling from the truck box. You may be familiar with the latter. If not, will forward 35mm pics (3 taken yesterday near Joplin and 3 taken today near Fresno). In seeking permission to trespass to get the latter, a possibility raised as to a further
statement of events by the farmer's mother, who, by coincidence lives across the hall. (Mrs. Frances Inman was in charge of the farm and family as her husband had sought employment in construction in No. Dakota at the time).

Not knowing the overall thrust of your book, there is a study in contrasts involved here. Presently, farmers, among others, are presently being encouraged, even subsidized, in distilling ethanol alcohol for blending with gasoline/diesel fuels. In about the 1933-34 era, farmers could not afford "Tulsa plus freight" pricing of gasoline/distillate despite the availability of light gravity crude oil in the Sunburst, Kevin and Cut Bank areas. So, many farmers resorted to buying crude and using crude plus residual oils to fire homebuilt, bootleg refining stills. At about 50 cents a barrel for crude, the operating margins were substantial and the prairie was dotted with smoke plumes which were entirely unrelated to Indian smoke signals.

Unfortunately, most such stills were not temperature-controlled nor equipped with safety valves, so some blew up. Under pressure from commercial refineries, the State invoked its low-pressure boiler rules and put the farmers out of the refining business so it was back to "Tulsa-plus".

We have a present-day parallel here in "OPEC" world pricing that is totally unrelated to local area "costs" plus reasonable profit margins. Equally true as to natural gas. This is an area that I am deeply involved in at this time which will require a great deal of time over the next couple of months, so may have to ignore your needs. (Hope you have a sense of humor!).

Hell, you have thoughts of your own so you don't need mine. Will add one more thought, even so.

Surprisingly, spreading grasshopper had no visible effect on bird populations, especially the Hungarian partridges. In fact, they flourished in great numbers. Unfortunately, the State Fun & Games (Fish & Game) closed the prairie counties allegedly because of scarcity of birds. We locals knew differently and petitioned to no avail. A rather severe winter with drifting snow piled up along the thistle-choked fences, a chinook-caused crust surface and the birds smothered. The spring revealed 10 to 12 coveys per mile of fence. One might find a surviving pair in four or five governmental sections. Have always felt that hunting may have dispersed the partridge more widely and more may have survived.

That's all,

[Handwritten signature: Charlie (aka Chick)]
June 6, 1982

Ivan Doig
17021 10th Ave. N.W.
Seattle, Wash. 98177

Dear Mr. Doig,

We are former residents of Glasgow, Mont. and receive the local Glasgow Council where we saw your ad requesting information regarding grasshopper poisoning projects.

My husband's father, Chester James Jackson, was the supervisor of this project under County Agent of Valley Co., Charles Jarrett. The spreader was built on our farm, south east of Glasgow. It was made from the rear end of a model "T" Ford which was pulled behind a pickup or small tractor. We have some pictures available if you care to use pictures in the text.
The mixture used in the spreader was bran and arsenate. In later years - 1950-1956 we did aerial spraying as my husband, Bob, had a spray plane for weed and grasshopper spraying.
Our phone # is 785-6029
Address: Robert L. Jackson
R.R. #1, Box 6, Meadow Hts.
Fort St. John, B.C., Canada
V1J 4M6

Since it has been many weeks since your ad was in the Courier you may not be able to read this info but should you want, feel free to call us or write a line.

Best wishes with your book and hopefully we will get to purchase one - so please keep in touch.

Sincerely,

Mrs. Robert L. Jackson
Dear Mr. and Mrs. Jackson--

Thanks very much for responding to my query about grasshopper poisoning. Needless to say, yours is the only response I've had from British Columbia.

By now I've heard from quite a number of people who were involved in the poisoning along the High Line, and into the northeastern corner of Montana. Also, I'm about to go to Montana, where I'll be talking with some of these respondents who live in Havre. So I think I'll spare you the list of questions I've been trying on them. What I will do is see what sort of photos the Montanans have--two or three of them are supposed to have some ready for me--and if they don't suffice, I'll get back to you about yours.

I might explain that my book is to be fiction, a novel set in northern Montana in the summer of 1939, but it will use the actual events of that summer--such as the 'hopper infestation--as background. I hope to be able to tell the stories of various persons who lived through the Depression years, by way of fictional folks.

again, my appreciation.
Dear Sir,

Seen your add in the Paper, & thought as long as I'm retired, I would answer. Yes I well remember those days '38-'39.

In fact my Model T Ford's rear end was converted to a grain hopper for a spreader with a 55 gal barrel on top for the fertilizer. But I don't know what you need. I don't remember the mix but possibly grass & saw dust mixed in a large stock tank & sowed. Top 10% of this, drawed, sowed up & applied. Please advise what you need if interested.

Eastern Mont. I Remain

Howard Sanderson
Box 303
Harris, Mont.
59501
Dear Mr. Sanderson—

Thanks very much for the prompt reply to my ad. What I'd like to do is come talk to you, about the 'hopper poisoning and conditions in 1938-39, when I'm in Montana this summer. I'll be around Choteau and Dupuyer from about June 15 through the first week or so of July. Sometimes then, my wife and I could drive up to visit friends in Havre, and I could have a session of talk with you then, if you're agreeable. Is there a phone I can reach you at, a couple of days beforehand?

Your Model T rig is already something I didn't know about. I've gone through the Gt. Falls Tribune for the summer of '39 and it's full of mentions of grasshopper poisoning, but never gives a blessed detail as to how it was done.

Looking forward to meeting you this summer.

best regards
May 12, 1982

Dear Ivan,

I'll be delighted to meet you and Mary this summer if you're in Havre. I'll be here in town most of the time. Sounds like fascinating research!

Sincerely,

Mary

265-9821 - ext 3275 (office)
265-9587 (home)
Fresno, mt. (Inman)
Fresno, MT. (Inman)
Fresno, Mt. (Inman)
NOTE — ANGLE IRON IMPELLER BARS ON ROTARY SPREADER TABLE
So. Chester Area (G. Kolstao)
Grasshopper Poison Bait Spreader

Internal view of "Paddle" to prevent "Bridging" or "Caking"

South Chester, Mt. Area (G. Kolstad)
Joplin, mt. (unknown)
Early Tractor-Drawn 3 Bottom Moldboard Plow

(Don't steal the Model "T" Windshield.)
So. Chester (G. Kolstad)

Early Disc Plow. (Horsey-Type)
Joplin, MT.  (Unknown)
Joplin, Mt. (Unknown)
CHARLES M. BRILL
PARK VIEW APPTS. #301
820 4th ST.
HAVRE, MONT. 59501

Mr. Ivan Doig
17021 - 10th Ave., N.W.
Seattle, WA. 98177
May 8, 1981

Dear Sir:

I spread some poison on a grant-funded work program during the depression. What would you like to know?

Do you already know all you want to know? During my work there I only know a couple of interesting special happenings. Why are you writing about Montana anyway?

Elmer Swynn
Box 966
Haavre, MT 59521
May 13, '82

Dear Mr. Gwynn--

Thanks for responding to my ad. True, I've lived in Seattle the past several years for the sake of my work as a writer and because of my wife's job here, but I count myself a third-generation Montanan. My grandfather came from Scotland a hundred years ago to homestead south of Helena; my father was a stockman in the White Sulphur country; and when I was in high school, we summered sheep on the Blackfeet Reservation, nine miles south of Browning. The book I'm writing will be about a family somewhat like mine, who've gone through the Depression years in Montana. I want to be honest and accurate in the details of life then, so as regards the 'hopper poisoning, I'd appreciate anything you could provide me along these lines--

---What the specific hopper poison was, and how it was mixed and spread.

---Where it was spread; along edges of fields, or actually in them?

---How much acreage might be covered in a day's spreading. How much of the summer the spreading went on.

---How many men to a crew, and what each one did.

---How much you were paid.

Also, if you'd care to share them, the "special happenings" you mention. I of course won't use the actual names involved, if you prefer.

I might mention that I've written three other books, the first of them a Montana memoir called This House of Sky. I'll try just as hard in this one to do justice to my home country.

best regards
Dear Mr. Cook—

I hate to put you to the trouble of typing up your material. If you'd like, I could simply do a tape recorder session with you, with you reading from your notes or whatever. Of course, suit yourself. But if my plans hold up, I will be in Havre July 12-13, and will give you a call before I come. My wife and I are leaving for Montana tomorrow morning, but will be in the Choteau area before we come over to Havre.

I'd certainly be glad for anything your neighbor might want to offer, in the way of Depression memories. Please pass word to him, too, that I could do it by tape recorder if he'd like. And I'd happily meet the professors you mention, too. I'll be in touch with you after the 4th of July, about all this.

best wishes
June 10, 1982

Dear Mr. Doig,

It was a great pleasure to receive the book "Winter Brothers" which you have so kindly autographed for me and I thank you so much. I feel I owe you much more than the few answers I gave you and intend to rectify the brevity of my answers as best I can. I will complete my little paper on the subject and as soon as I get it typed (I'm rather slow at that) I will forward the copy to you.

An old neighbor had seen your ad and became quite interested, telling me he was going to jot down some of his memories for me to send.

Also, two Northern Montana College professors have taken a considerable
interest in your works and have encouraged me to find out all I can to give you. When I told one of them who is a retired English teacher that you had mentioned you might visit Naure, he was most interested and asked that we let him know when that might be. Mr. Doig, these two men I have mentioned are most interesting fellows. The retired English teacher runs the Public Library here and the other is a biology professor of note, publishing books in his field. We all hope to meet you this summer - we will have much to talk about.

Thanks again

Yours truly

Edward J. Cook
Dear Mr. Cook—

Your answers to my questions help a lot. Many thanks for taking the time and effort. I had intended to provide you a copy of This House of Sky in appreciation, but since you’ve tracked that one down by yourself, I’m sending you a copy of my second book, Winter Brothers. It has almost nothing to do with Montana, but is about westernness.

If you wouldn’t mind, please hang on to whatever other material you may have about the hopper years—community meetings you mention, and so on—as there’s a chance I may get to Havre briefly this summer. If I do, I’d much like to talk with you for an hour or so, if you’d be willing, about life during the Depression. Mail works fine on specific questions, but I found in writing House of Sky that conversation maybe does better generally. If and when I can manage a Havre trip, I’ll get in touch with you.

Again, my appreciation.
May 20, 1982

Dear Mr. Doig,

Received your letter of May 13th and will try to supply some of the information you have requested.

The poison used was arsenic which was added to a mixture of wheat bran, amyl acetate (banana oil we called it, because of the scent) and stock molasses, the latter two items seemed to attract the insects and disguise the toxin. It was mixed in an old cement mixer where water was added to make the mixture moist. When we ran out of bran, sawdust was used and this made an acceptable substitute except for the greater danger to wildlife and livestock because of the large chips found in it.

The mixture was spread either by hand, which was dangerous, or by a mechanical spreader, usually homemade. It was spread around the edges and sometimes through the fields depending upon the advance of the pest.

A large acreage could be covered in a day, particularly if only spread around the edges of the fields. Even with horses and wagons, hundreds of acres
Could be covered and it was necessary to do it rapidly to avoid the mixture drying out.

The were not paid, at least not here in Hill County where the effort was headed up by County officials in cooperation with agricultural people. I believe, the state. It was actually a community effort with the farmers pitching in at the mixing plant, unloading the bran or sawdust molasses, procuring water, and mixing the ingredients. The arsenic and acetate were handled by the men in charge. We then loaded the vehicles of the farmers and they hurried home to spread it.

As you say you have read that the hoppers traveled in clouds - it is true. These hoppers were of the migratory type and I had seen the shadow cast when they flew between one standing on the ground and the sun.
I had written up much more about the infestation but did not have it typed up as it did not seem that you wanted what I had written.

For example, I believe the year was quite a bit earlier here than 39. Also, just how they damaged the grain, tools, clothing, etc. Community meetings were held where the discussions and tensions reached fever heat. There may also have been a somewhat different pest in the area you are writing about, that was equally destructive but did not fly in such swarms, the Mormon Cricket which seemed to hit areas nearer the mountains. The Highwoods, just south of Chelten was hit by these insects. Hope this brief resume helps. Obtained a copy of your book, "This Land of Sky" I find it very interesting as it brings back memories of our own farm experiences.

Wishing you good luck with the story,

Yours truly,

Edward Clark
Mr. Ivan Doig
17021 10th Ave. N.W.
Seattle
Wa. 98177
May 10, 1982
Havre, Mont.

Dear Mr. Doug,

Having worked in the hopper poisoning projects in Hill County during the 1930’s I might have something to offer. However, I would like to know more about your plans concerning the use of such a story in your book. Yours truly, Edward J. Cook

Ret. Teacher & Farmer / Age 71
Dear Mr. Cook--

Thanks for responding to my ad. The book I'm writing is fiction—a novel set in Montana in the summer of 1939. It'll primarily be about a family in the Dupuyer-Choteau area, where I lived during high school—my father ran sheep on the Blackfeet Reservation in the mid-1950's—and the grasshopper poisoning information is among the historical details I'm gathering, in an effort to make the book historically accurate. Because it's fiction, there'd be no danger of embarrassing anyone still alive; all I'm after anyway is how the poisoning was done, so I can have my own characters do it. I'd appreciate anything you'd like to provide, along the lines of these questions I'm asking of other people involved in the projects, but will certainly understand if you prefer not to.

---What was the poison, and how was it mixed and spread?

---Where was it spread: along the edges of fields, or actually in them?

---About how much territory could be covered in a day's work?

---How much were you paid, and was it by the hour or day or week?

---How did you get the job—that is, who hired you and oversaw the work? Was your own family farming during the infestation?

---I've read that the hoppers traveled in clouds, and that the earth literally moved with them. Any specific memories or description you have of what the hoppers would be helpful.

I might mention that I've written three other books, the first of them a Montana memoir called This House of Sky. I'll try just as hard in this one to do justice to my home country.

best regards
Dear Dion,

May 20, 1982

When I try to get down to specifics I don't remember much. Bill Tall and the others.

P.S. a piece of me is released.

Nevan Port

--

I only spread around the edges of the sunny afterglow still standing and the edge of the crop

My dear Hester, today at around 3:30 I am leaving the house after all these years. The sky is

blue and I have a lot of work to do. I will be seen next week at the first meeting.

With all my love,

Nevan
long and then placed in a vertical position. A framework was fastened on to look to a face or head and braces put on to hold the head and in its vertical position. The drive shaft end was fastened to a sort of frame about in the bottom with some roves on the top of it to spread the poison. As a person drove this rosted as the wheel turned the drive shaft. Above this was a hopper, probably 5 or 6 30-gallon barrel which was fastened solidly to the housing and frame. A screen was placed in the hopper. The poison either falling through a predetermined size hole, of course some had variable adjustment. Sometimes a stirrer was added to the drive shaft or through the barrel so the poison could be stirred. I don't think this was used much as the bouncing of the whole machine stirred the poison enough so it would fall thru the hole onto the spreader fan.

I pulled the spreader they gave me with a mule. And I also, I covered the radiator with a sack to keep the motor warm as I could burn
\[\frac{1}{2}\text{ gasoline and }\frac{1}{2}\text{ tractor fuel (called farm fuel),}
\text{dictate or whatever) which was about}
\text{like kerosene. Most used gasoline. One}
\text{fellow used a sedan car probably a Ford}
\text{8. The rest all used pickups.}
\text{I thought they wanted to cover acres}
\text{so done at a good speed, probably}
\text{about 15 mph. I had a good hitch on the}
\text{car so after a few days the spreader frame}
\text{broke so they gave me a different one}
\text{and was told to go half as fast. That}
\text{limited the program indeed.}
\text{He were given 900 sacks of poison I think}
\text{and they argued that I couldn't haul that}
\text{much but we got by OK by putting}
\text{a sack on each binder, then using it}
\text{first. I think I had a helper to help}
\text{put in the poison.}
\text{He poisoned a large area (more than}
\text{at least county land) which had}
\text{frosted corn all over and in bloom}
\text{and grass all over all over. There}
\text{were enough to cover the county}
\text{in another year.}
after spreaders went wherever they were told. This project spread all over
fence to fence and all between.

Some individual farmers made spreaders
and used them. I understand that they would
spread maybe 10 to 30 feet wide or maybe 2
foot line around the corn in the crop. Each
farmer does his own thing you know so
each did whatever. Sometimes on four rows
sometimes in stuff but usually in
The 1st 10-30 feet of crop (maybe an average I think)
back to when I spread for the goat.
The prison was delivered to a central
place out where we were spreading.

Back to yard - when I went to yard
to get my personal stuff to use on my own place.

There were a lot of farmers waiting in their turn
for some prison whether they needed it or
not. While waiting some fellow offered me
some liquor. (Call it beer in Europe)
where it started it is beer combined with
its company name. I took a small amount of
beer, soon I thought I should sit down.

There was nothing but a 30 gal barrel lying
down to sit on. Well, I was all set, relaxed
and parked about 6 inch or a foot above
the barrel. So when I hit it was quite a shock. Ainch free fall is faster than I ever thought.

My own homemade spreader was sort of bogged up deal and I didn't use it much as I didn't need it much.

In the hands of other people, getting the poison in a wagon and spreading it by hand probably threw it out with a shovel. I personal knew nothing of it.

About a month ago I fellow told about some of that old poison someone had left over. It was stored in an old shed which was finally burned and the ashes covered. Many years later some fellows dug up it dug & killed themselves eating the ashes (in sheep's wool & mixed in some kind of sugar or by hand with a box and should Arsonic water and draw.)
How many people were working spreading for the Department? I put out 9 piles (2 ever 1) in probably 3 hours and covered from 45 to 60 acres — later on about half that fast as indicated.

My wife thinks we spread in June and I expect that is right.

It is after the crop gets going. Forget the rain or me, draw and sheller to ride along for company and help dump back.

For myself, me.

How much pay I don't know.

I think you may get a more accurate picture if you wrote to ALFRED DRAUGER Hauser, MT 59503

Exact address in New phone book.

And think he may have worked for them and he remembers detail.
June 4, '82

Dear Elmer--

Your answers to my questions help a lot. Thanks for taking the time and effort you did.

A couple of things you mention are new ones on me. They're the sort of detail that'll help me in this book, so I wonder if you'd be willing to expand on them for me just a bit:

"Jim Hill mustard"; is that really a kind of mustard, or a scornful name for something else? I of course know who Jim Hill was, but have never come across this phrase. If it is mustard, am I right that the blooms you mention would be the color I seem to remember, a sort of butter or buttercup yellow?

Covering your model A radiator with a sack so it'd run hot enough to burn \( \frac{1}{2} \) tractor fuel. I remember covering radiators against winter cold, but you mention this was a case of covering "the radiator \( \frac{1}{2} \) with a sack". I'm curious about exactly how that was done: a gunny sack fixed across the upper half of the radiator, say, or was the sack covering one half of the radiator from top to bottom but only \( \frac{1}{2} \) way across its width? This is a small thing, whether the sack was over half of the radiator lengthwise or crosswise, but if I get it wrong in the book, ame as the devil I'll hear from somebody about it.

Except for this couple of questions, I think I savvy the hopper poisoning procedure now. In appreciation, I'm sending you a copy of my earlier Montana book, This House of Sky. Also, there's a chance that I may get to Havre briefly after the Fourth of July. If you and your wife are going to be around, and would be game to talk a bit about life during the Depression, I might look you up.

best wishes
Dear Mr. Doig

Received your letter today.

We have purchased a Nash Home & will be on the road a lot this summer. If all goes as planned, but our phone is 706-265-1541. There is still a few of the Old Model T rear ends with a 55-gal barrel hooked up in some of the old junk piles on farms. If we are home would be glad to talk to you.

Will be 63 yr. in June and remain,

Howard Sanderson
Box 303, Kenedy,
Mont 59501

13 May '82

Dear Mr. Sanderson—

Thanks for providing the phone number. I'll hope we can get together this summer, but if not, I'll resort to mail. You've already helped me with the information about the modified Model Ts—I was baffled as to how all that poison was spread.

best regards
I'd like to run the following as a classified ad in the Courier two consecutive weeks. Would you please quote me a rate?

For a book I'm writing about Montana during the Depression, I'd like to hear from anyone involved in grasshopper-poisoning projects in 1938-9. Ivan Doig, 17021 10th Av. NW, Seattle WA 98177.

thanks
Please quote me the rates for running the following as a classified ad for four consecutive days, and for a week:

For a book I'm writing about Montana during the Depression, I'd like to hear from anyone involved in grasshopper-poisoning projects in 1938-9. Ivan Doig, 17021 10th Av. NW, Seattle WA 98177.

thanks
Dear Mr. Doug:

I saw your notice in the Frontier Trader - published by the Phillips County News at Malta, Mont. I was born and raised at Heggeland, which is about 25 miles west and north of Malta, only 12 miles from the Canadian border.

I don't remember the year exactly, but it was only a year or two after I started to farm. My Dad and Uncle rigged up a homemade spreader on the back of the truck. I think it was run by a small gasoline motor but some were run by a belt connected someway to the truck wheel. Some had spreaders on small 2-wheeled trailers and pulled by the truck. One man drove the truck and one or two were in the boy shaving the bait onto the spreader.

A mixing plant was set up in
the town of Zigzag. I believe the sawdust was brought in by the train in boxcars. Arsenic in water and banana oil was mixed with the sawdust. Banana oil was to attract the hoppers. The bait was spread early in the morning while it was done. They tried to cover the edges of the grain strips, fence lines and prairie roads.

I would be interested in hearing from you and about your book.

Sincerely
Adrian Olzegowski
May 18, '82

Dear Adrian Olszewski--

Thanks immensely for responding to my ad, and for providing the information you did. I've heard from a few people at Havre, where I also ran the ad, but none gave me as clear a picture of the procedure against the grasshoppers, and none mentioned the banana oil as attraction.

As to the book I'm doing, it'll be fiction, a novel set in Montana in the summer of 1939, mostly over in the Choteau-Dupuyer country where I lived during high school. But I want the people of the book to be as real as possible--a number of them will be drawn from members of my family, or people I grew up around--and I want too to be honest and accurate in the details of life at the time, which accounts for this research into hopper poisoning. I've written three other books, the first of them a Montana memoir called This House of Sky (I'm sending you a complimentary copy as thanks for your information), and I'm trying hard to do justice to my home country with this one.

I think I savvy how the poison was spread. I'd appreciate anything you can recall about the results, the aftereffects, along these lines--

--Did the poison kill the hoppers immediately; stop them in their tracks, so to speak? And did it kill any sizable proportion when a cloud of them arrived? Was anything done with them after they were poisoned--that is, did they have to be shoveled or scooped up, or just let lie?

--One of the Havre men writes me he has a nickel-sized scar, I suppose a sort of burn, from the poison. Do you recall ill effects of it on persons, or livestock?

--You have a good knack of description. I wonder if you might tell me what the grasshopper infestation looked like to you--what color the swarm might have been, its apparent size, how it moved (in a sort of cloud, or whizzing everywhere), any smell or feel you remember about the creatures.

I have one other question, which is sheerly coincidental. In the Montana WPA archives in Bozeman, I found reference to harmonica bands which were formed in the rural schools of Blaine County during the Depression--"one aggregation at Turner supplied music at all the chief public functions during the summer of 1936." Remember anything of that?

Best regards
Dear Sir —

I remember the grasshopper poisoning of the 50's. What exactly do you want to know? I remembered how it was spread and where. If you wish to hear more, please contact me.

Eugene Hatfield
Box 92
Missoula, Mt
59202
May 21, '82

Dear Mr. Hatfield—

Thanks very much for responding to my ad. I might explain that what I'm trying to do is to portray a Montana family in the summer of '39. The book will be fiction, but with elements of my own family and people I grew up around—I went to high school at Valier, did some summer farming there and around Cut Bank during college, and my folks ran sheep on the Blackfeet reservation—and I want the book to be as honest and accurate as possible about those Depression years. So, I'd appreciate anything you can provide, along the lines of these questions—

—What was the poison you used, and how did you mix it and spread it?

—Where was it spread: along edges of fields, or actually in them, or what?

—About how much territory could you cover in a day's work?

—Did the poison kill the hoppers immediately; stop them in their tracks, so to speak? And did it kill any sizable proportion when a cloud of them arrived? Was anything done with them after they were poisoned—that is, did they have to be shoveled or scooped up or plowed under, or just let lie?

—A fellow at Havre wrote me that he has a nickel-sized scar, I suppose a sort of burn, from the poison. Do you remember ill effects of it on persons or livestock or wildlife?

—The grasshopper infestation was before my time. I wonder if you might tell me any details of what it looked like—what color the swarm might have been, its apparent size when it hit the area where you were, how it moved (in a sort of cloud, or whizzing everywhere, or creeping, or what), any smell or feel you remember about the creatures.

—When I was growing up in Montana in the 1950's, the northeastern part of the state was known as spring wheat country. Was that the case there in the 1930's, during the 'hopper years? If so, why was your part of the country best for spring wheat—did the pattern of precipitation account for it, or what?

Again, my appreciation for your offer to help. I've written three other books, the first of them a Montana memoir called This House of Sky, and I'll try just as hard in this one to do justice to my home country.

best regards
Dear [Name],

I saw your ad in Glasgow Courier.
I would like to know all the information that you would like to have concerning the times of the depression days and grasshopper poisoning times. may I hear from you thank you

[Signature]

13. 40
Frazer,Mont
May 13, '33

Dear Mr. Teichroew—

Thanks for responding to my ad. I'd appreciate anything you can provide me along these lines—

---What the specific hopper poison was, and how was it mixed and spread.

---Where it was spread; along the edges of fields, or actually in them?

---How much acreage could be covered in a day's spreading.

---How many men to a crew, and what each one did.

---How much you were paid.

---I've read that the hoppers traveled in clouds, and that the earth literally moved with them. Never having seen this myself, I'd appreciate any memories or description you have of the grasshopper summers.

Those are the main details I need, but if you'd care to, I could certainly stand to hear whatever you'd care to share about life during the Depression. My book will be about a family (based somewhat on my own, over in the Dupuyer-Choteau country) who've endured the Depression in Montana, and I especially need small details—what a person did for money when the banks closed; what you ate when times got harder and harder; any scrimping and making-do you contrived for the sake of getting by. Also, since I notice you're in the Ft. Peck country, I wonder if you have memories of the building of the dam, and the construction towns of the time?

best regards
Mr. Braig,
I was interested in your ad. in the paper about what happened in the dry year when we were ordered to poison the gophers on our land. The B. L. M. had a bunch of men to work on thine land and one man had a couple of men left over and put them in an empty shack, and his neighbor saw it and the poison and three of them died. I was issued two tasks with orders
To Feed the lamps and water the plants. I'm afraid the Fed-a-lights may also be fed. 

Please ensure the garden is well-watered.

Best regards,

My book, 'The Tao of Poetics' is highly recommended. It helps me understand literature better.

Many thanks for passing along the information about Egeria.

--

June 2nd
Malta, Mont. 59538
May 21, 1982

Ivan Doig 110 21 10th ave
N. W. Seattle, Wash. 98177

Dear Sir,

I seen your aid in the Phillips County Rev. that you would like to hear from anyone involved in poisoning grasshoppers. During the depression, we put out poison than if it done any good not. I do not know I know it killed about the birds that there were to sagehens.

If you would like to know any more you can write to me.

Fred Olson
Boy 1022
Malta, Mont. 59538
Phone 406-654-2859
June 2, 1982

Dear Mr. Olson--

Thanks for answering my ad about the grasshopper poisoning. I'd appreciate anything you can provide, along the lines of these questions--

--The grasshopper infestation was before my time. I wonder if you can tell me any details of what it looked like--what color the swarm of grasshoppers might have been, how big it looked when it hit the area where you were, how it moved (in a sort of cloud, or whizzing everywhere, or creeping, or what), any smell or feel you can remember about the creatures.

--I've read that the 'hoppers would eat almost anything in their way: clothes on a clothesline, for instance. Do you have any memories of that, of them eating things besides the crops? And how would they eat the crops: devour the head of the grain, or stem and all?

--I was interested in your comment that the poison killed wild birds, such as sage hens. Did it pretty well wipe out the birds for a while, do you think? That is, did you see a lot of dead birds after the poisoning?

best wishes

[Signature]
June 2, '82

Dear Mr. Jones——

Your answers to my questions help a lot. Thanks for taking the time and effort, and for thinking to enclose the sketch of the home-made spreader. I may be back in touch with more questions as I work with material for the book, but for now, I think have enough to digest.

In appreciation, I'm sending you a copy of my first Montana book, This House of Sky. It's set in a different part of the state than your country, but I hope you'll like it even so.

best regards
Dear Mr. Doig,

I am going to try and answer your question as near as possible.

For your information, I came to Mont. from No Dakota when I was three years old. I have spent the major portion of my life here in Reelers and the area close around.

I managed the Farmers Union Oil Co of Reelers from June 1936 to June 1976 as well as farmed and did some trucking on the side. I am pretty much retired at this time as my health has gone down hill in the last year.

My son and Son-in-law does the farming now. We have in all about 3000 acres to work. So much for that.

As I recall the government (Federal) came in with this emergency program due to a very heavy infestation of hoppers in this area. They were really cleaning the young grain up just as
Just as it came thru the ground. Hopper made its way from the outside of the field toward the center. The reason for this is usually they lay their eggs where there is coverage for winter protection, as they eat their way in the fields will take on a very irregular pattern on the edges.

Scobey being the County seat of Daniels County was pretty much the central location so the military was did in these, and the `gov` had a truck that hauled the milo out from Scobey to Peerless - Flatwell and Whitetail. It came out in four to five ton loads and was reloaded onto an old W.P.A. shed we had on our lot. It was in bags (berlap) and was dripping with water. From here the farmers would come in and pick it up and go out and spread it - lay hard. Some one would run the pickup and one would take in the back with a scoop and throw the grain out as far as possible. This was not the most efficient job. Some of the farmers
that had larger averages made speakers
from the rear end of cars. There was a lot of
old model 2. Ford cars around then. They
would take the rear end and build a platform
and hitch on them and stand the drive shaft
vertical with a fan on the end which
had a table built around it. They would
shovel the potson in the hopper and the fan
would throw it 30 or 40 feet. This did
a much better job. They would pull it
with a tractor or pickup.

The potson was mixed with cement mixers
as I recall. It consisted of bran flakes to
begin with, but later sawdust was used
as they ran short of bran. The sawdust
dust have been hauled in because there
isn't any saw mills or timber in this area.
Bannana oil and arsenic were added.
The bannana oil was to draw the hoppers
and the arsenic was the bedding agent. The
arsenic came in bags and was in a
powdery form. It is a dull gray color
I believe. Later in the season the gov-
ran out of bags and the potson was
Rollel loose in the truck. It was then
shoveled off on a pile and the farmers had
to bring their own bags and to bag it. So
no there was days I was coated with
that poison for 14 hours. We didn't get
any extra pay for it either. Too as a work
driver 8 to 10 o'clock till 4 P.M. and we were happy to
have a job. I would guess during that
summer I handled 80 to 100 tons of poison.
We ran out lots of times as they couldn't
mix it fast enough.

I really don't know how much good it
did but there was some fair crop that year.
I might add the ranchers were very
upset with the program as every cow
or sheep that died for the next number of
years was laid to the arsenic. They
may not have been too wrong as arsenic
is very soluble and very heavy so it
could wash down into the low water
holes and just lay there.

This part of the state is mostly spring
wheat and barley. Winter wheat I don't
stand our climate for some reason. It usually
kills in the spring I think. However some
Farmers do keep on trying it. We also have quite a lot of ranching in here. Our average rain fall is around 14 inches, I believe. We have had three really dry years these now. Looks good this year but it is really a lot springy. May is almost gone and I doubt of 10% of the crop is in.

Hope I have answered the questions you asked. If I can do you any more good just drop me a line.

Hope your book turns out real good.

Yours Truly

Saban Jones
Mr. Iwan Kog
Seattle, Washington

Dear Sir,

See a small add you had in the Hi Line Express out of Glasgow.

Being fairly much of a native of Montana I thought I might be able to give you a little light on the topic you ask about.

If you would care to send me an outline of questions I would try and answerer them for you.

I handled many many tons of this material as at the time I was manager of a farmers Union Oil Co., at
Peerless and we took on the
Job of distributing the pension at the station.
If you are interested I will help you.
Yours truly,
John Jones
May 21, '82

Dear Mr. Jones--

Thanks very much for responding to my ad. I've heard from a number of people around Havre, where I also ran the ad, but nobody else who was involved in the distribution of the 'hopper poison. I might explain that what I'm trying to do is to portray a Montana family in the summer of '39. The book will be fiction, but with elements of my own family and people I grew up around--I went to high school at Valier, did some summer farming there and around Cut Bank during college, and my folks ran sheep on the Blackfeet reservation--and I want the book to be as honest and accurate as possible about those Depression years. So, I'd appreciate anything you can provide, along the lines of these questions--

--Other people have told me the poison ingredients included sawdust, arsenic, and sugar-beet molasses or banana oil to attract the 'hoppers. Were these standard, or were there other possible ingredients? Do you remember the proportions of the mix? And how was the mixing done? (Someone told me by cement mixer; I assume not everyone had one of those, and other methods must have been used.) There at the Farmers Union, did you provide all of the ingredients? If not, where did the farmers get the other necessary stuff?

--What was the funding on any of this? That is, did the federal government or state or county help with the financing? And were county agents involved in overseeing the poisoning, or was it pretty much independently done by the farmers?

--Do you remember the figures on how much of the poison ingredients your Farmers Union distributed in any of those years? Also, can you tell me how the poison itself, the arsenic or whatever, was packaged: was it handled in barrels, sacks, or what? I've never been around it and so don't have an idea of what it was like: a powder, or pellets, or what? And what color?

--What little farming I've done was in winter wheat or barley country. But there at your end of the state in the late 30's, what was the prime crop--spring wheat, or something else? (From figures I've seen from the 1950's, northeastern Montana was heavily spring wheat; what accounts for that, the precipitation pattern?) Were the 'hoppers more a threat to one crop than any other, or would they eat it all equally?

--Finally, where was the poison shipped to you from; that is, who were some of the suppliers?

Again, my appreciation for your offer to help. I might mention that I've written three other books, the first of them a Montana memoir called This House of Sky. I'll try just as hard in this one to do justice to my home country.

best regards
Ms. Ivan Love
17021 - 107th Ave N.E.
Seattle, WA.
98177
Dear Mr. Doug,

This is such a busy time right now on the farm, I can't get to putting down facts for you. I will get at it as soon as possible. I can get some pictures, possibly to send you of machines used etc. I'll try to get at it soon.

Eugene Haefferd
Boo 92
Flaxville, Mt
59232
Dear Mr. Fast---

Your answers to my questions are a great help. Thanks immensely for taking the time and care you did. I may be back to you with a few more questions as I go along with this book; it'll be about another year and a half in the writing. Meanwhile, I'm sending you a copy of my earlier Montana book, This House of Sky, in appreciation.

Yes, there'll be a love story in this novel, but it won't involve my main character, who'll be a boy of 14 in that summer of 1939. He'll be narrating the story from now, when he's nearing 60, so I hope to get a couple of angles of view into Montana life that way.

best regards
Dear Mr. Fast--

Thanks very much for responding to my ad. I might explain that what I'm trying to do is to portray a Montana family in the summer of '39. The book will be fiction, but with elements of my own family and people I grew up around—I went to high school at Valier, did some summer farming there and around Cut Bank during college, and my folks ran sheep on the Blackfeet reservation—and I want the book to be as honest and accurate as possible about those Depression years. So, I'd appreciate anything you can provide, along the lines of these questions--

--What was the poison you used, and how did you mix and spread it?

--Where was it spread: along edges of fields, or actually in them? And how thick; that is, a thin scatter such as might be used in poisoning gophers, or did it have to be considerable?

--About how much territory could you cover in a day's work? How many of you on a crew, and how was the job divvied?

--Did the poison kill the hoppers immediately; stop them in their tracks, so to speak? And did it kill any sizable proportion when a cloud of them arrived? Was anything done with them after they were poisoned—that is, did they have to be shoveled or scooped up or plowed under, or just let lie?

--A fellow at Havre wrote me that he has a nickel-sized scar, I suppose a sort of burn, from the poison. Do you remember ill effects of it on persons or livestock or wildlife?

--The grasshopper infestation was before my time. I wonder if you might tell me any details of what it looked like—what color the swarm might have been, its apparent size when it hit the area where you were, how it moved (in a sort of cloud, or whizzing everywhere, or creeping, or what), any smell or feel you remember about the creatures.

--When I was growing up in Montana in the 1950's, the northeastern part of the state was known as spring wheat country. Was that the case there in the 1930's, during the hopper years? If so, why was your part of the country best for spring wheat—did the pattern of precipitation account for it, or what?

Again, my appreciation for your offer to help. I've written three other books, the first of them a Montana memoir called This House of Sky, and I'll try just as hard in this one to do justice to my home country.

---best regards---
Mr. Ivan Doig

The poison we used was a mixture of bran, sawdust and strychnine. It was furnished by our county and at first we had to mix it ourselves but later it came to us in burlap bags. Earlier in 1933 we spread it by hand but by 1939 many people had made spreaders. This was made from the rear end of a Model T Ford with the drive-shaft painted upward. This protruded into a barrel and a blade was attached which by whirling around sort of spreaded the mash. This was pulled either by a pick-up or a team of horses.

It was spread rather thinly only where the infestation of hoppers were, which was usually where there had been a weed cover over winter. It had to be thin so livestock could walk and feed on the hoppers. It worked. What if there were two to do the job, one to drive and the other feed the spreader, I'd say if you covered 30 acres you'd done a day's work.

No, you wouldn't find dead hoppers till a day later or there even they would be hard to spot on the ground. Not only but here ever had to scoop them up, the dead ones sort of disappeared. Yes, I remember my Dad got very sore fingers, especially under the nails, from scattering it by hand in 1933.
Around here the hoppers had only mildly infested the area in 1937 and 1938. But then in the spring of 1939 the weather was just right for a favorable hatch as in May the fields were full of young hoppers. We frantically started poisoning but anyone could see it was an uphill battle (too much territory to cover) but we tried. Just what happened I'm not quite sure, but suddenly they were gone. I think high winds carried them away so very few were left. I never saw them leaving by swarms. But I do remember that during the infestation if you would hold your hand above your eyes, on a windy day, you could see the air was full of them, by looking at the sun. It must have been in July when we noticed they were gone as we had the best crop that we'd had in many a year. By the way we sold our wheat that fall for 65¢ a bushel. I also bought a new Ford car for less than 800 that year. The hopper was a sneaky creature and when you crushed him he squirted a brownish fluid out of his body.

My wife remembers that one day the air was just dark with hoppers as maybe that was the time they left. It seems to me now that it was on a Sunday.
The northeastern part of Montana is still spring wheat country, north of the Missouri river. South of the river winter wheat does good. I think our winters are just that much colder, north of the river, to kill it during spring break up, the rain fall about averages the same on both sides. I've never tried winter wheat on my farm in 30 years.

I'd like to read your book when you've finished. Are you bringing in a love story with it?

This might say my father brought me here from Minnesota 66 years ago and I'm still on the same home place. My grand sons are the 4th generation. Thanks on this farm. If you have any other questions I'd like to help.

Sincerely,

Arthur W. Fast

P.S. My sentence structure is poor in this hasty letter as I should really rewrite it, but I'll let you do it.

1937 we dried out. (The year I married)
1938 we rusted out.
1939 it looked as if this year the hoppers would eat us out, but they left without doing much damage.