SMITHSONIAN INSTITUTION
Bureau of American Ethnology
Bulletin 154

River Basin Surveys Papers, No. 2
Prehistory and the Missouri Valley Development Program
Summary Report on the
Missouri River Basin Archeological Survey in 1949

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SUMMARY REPORT ON THE MISSOURI RIVER BASIN ARCHEOLOGICAL SURVEY IN 1949

By Waldo R. Wedel

INTRODUCTION

Continuing its studies of the archeological and paleontological materials that will be adversely affected by the expanding Federal water-control program in the Missouri River watershed, the Missouri River Basin Survey carried on its field and laboratory activities throughout calendar year 1949. For various reasons the year was an unusually trying one, even frustrating in some respects; but within the limit of available funds and in the face of a rapidly changing personnel picture, a measure of progress nevertheless can be recorded.

The Missouri River Basin Survey, now in its fourth year of operation, was initiated in 1946. It is one regional phase of the nation-wide River Basin Surveys, directed by Dr. Frank H. H. Roberts, Jr., Bureau of American Ethnology, for the Smithsonian Institution, and is supported by funds transferred by the Bureau of Reclamation through the National Park Service. The nature of the interbureau agreements which form the basis for all these investigations, and also the general background, organization, and objectives of the Missouri River Basin Survey, have been detailed in other papers.[1] In briefest outline, the purpose of the Surveys program is to locate, systematically record, and appraise the archeological and paleontological materials that will be lost as a result of the Federal water-control projects planned or under construction by the Bureau of Reclamation, Department of the Interior, and the Corps of Engineers, Department of the Army; to pass on this information to the National Park Service; to make recommendations, where needed, as to the steps required to insure recovery of a minimum representative sample of the scientific

[1] See Smithsonian Misc. Coll., vol. 107, No. 6, April 23, 1947; Amer. Antiq., vol. 12, No. 4, pp. 209–225, April 1947; and the annual reports of the Bureau of American Ethnology for 1945–46, 1946–47, 1947–48, 1948–49.

information that would otherwise be lost; and to direct the Federal phases of such subsequent detailed recovery work as may be provided for, including limited or comprehensive excavations at key sites.

The present report, fourth in a continuing series, briefly reviews the field and laboratory operations in archeology and paleontology by the Missouri River Basin Survey during calendar year 1949. Like the annual summaries which have preceded it this one is in no sense a complete and final report of accomplishments. Rather it represents a statement of progress made during the period indicated; and any interpretations advanced are subject to revision in the light of more penetrating analyses by the staff members and others on whose industry the present report is largely based. Also included are brief summaries concerning the work of several States agencies cooperating actively in the recovery of materials which might otherwise be lost.

As in previous years, the Missouri River Basin Survey is indebted to various organizations, agencies, and individuals for assistance of many kinds. Among the Federal agencies with which the Survey was in particularly close contact, mention should be made especially of various officials in the National Park Service, notably in the Chief Historian's Office in Washington, and in the Missouri River Basin Recreation Survey Office, Region 2, Omaha; the Bureau of Reclamation, including its regional and various field offices; and the district and field offices of the Corps of Engineers. Among State and other non-Federal agencies, the continued readiness of officials of the University of Nebraska and its Laboratory of Anthropology to furnish space at a nominal fee for the Survey offices and laboratory was an especially appreciated courtesy. Survey field parties, as well as the Lincoln office, were the recipients of innumerable courtesies and services from numerous project engineers, representatives and employees of construction companies, and private individuals, to all of whom, though they go nameless here, sincere thanks are due. Last but by no means least, the continued efforts and unflagging interest of the Committee for Recovery of Archeological Remains, which represents the archeological profession of the Nation and various learned societies, must be gratefully acknowledged.

I have indicated that the year 1949 was a particularly trying one. There were several reasons for this. First and foremost was the question of funds. Reduced allotments by the National Park Service for fiscal year 1949, which included the first half of calendar year 1949, and mandatory salary increases for which no supplementary funds were granted, meant that the working funds actually available were nearly 30 percent below those for the preceding year, from which there had been virtually no carry-over. The prospect of little or no carry-over at the end of fiscal year 1949 meant that field plans for the summer of 1949, which included proposals for excavation of se-

lected sites in Fort Randall, Garrison, Oahe, Tiber, Mullen, Yellowtail, Harlan County, and Baldhill Reservoir areas, plus preliminary surveys elsewhere, could not be set in motion because of uncertainty concerning congressional action on the appropriations bill on which the plans depended. By the time appropriations for fiscal year 1950 (July 1, 1949 to June 30, 1950) were clear, the 1949 summer field season was virtually over and it was impossible to organize any large-scale excavation projects. The Missouri River Basin Survey was able to conduct limited field investigations in 1949 only because of transfer of special funds, earmarked for specific purposes, by the Bureau of Reclamation and the National Park Service. One of the few bright spots in the 1949 picture was the fact that the increased fiscal year 1950 funds, which finally became available in September 1949, will perhaps ease the way toward planning and implementing of a large-scale excavation and survey program in calendar year 1950.

Also complicating the Survey operations was a rather heavy personnel turn-over, particularly among professional staff members. Owing in part to the straitened financial condition of the organization, i. e., reduced allotments in the face of increased operating expenses, two archeologists were separated from the project early in 1949. Two others resigned, one in May and one in September. Thus, to the immobilizing of professionals who should have been in the field was added the loss of others who would have been preparing reports on the work that had been accomplished previously. Aside from the resulting inevitable increase in backlog of unreported data and materials, the effects on morale of remaining project personnel of all this uncertainty regarding the future of the program can perhaps be imagined. There is scant consolation, of course, in the realization that other phases of the River Basin Surveys program were struggling under the same, or similar, handicaps and uncertainties.

PERSONNEL

Several changes took place in the professional staff of the Missouri River Basin Survey during 1949. Owing to a reduction in the funds available for fiscal year 1949 as compared with the allotment for the preceding year and to increased operating expenses for the project, it became necessary to reduce the staff soon after close of the calendar year 1948. Early in January, Wesley L. Bliss, archeologist, was released, and J. Joe Bauxar, archeologist, was transferred to Oklahoma. In May, Marvin F. Kivett, archeologist, resigned to accept the position of Museum Director at the Nebraska State Historical Society; and in the same month, through transfer of special funds for specific survey purposes, Richard P. Wheeler was assigned to the Lincoln office. In September, Jack T. Hughes resigned to return to school;

and in November the staff paleontologist, Dr. T. E. White, was temporarily transferred to another project. At year's end, the professional staff included three full-time archeologists: Paul L. Cooper; Robert B. Cumming, Jr., laboratory supervisor; and Mr. Wheeler.

Full-time laboratory and office personnel included Dean Clark and A. E. Nixon, laboratory assistants; J. M. Shippee, expert laborer; George Metcalf, field and laboratory assistant; and Mrs. Ina May Reagan, clerk-stenographer. Drafting was carried on throughout the year with part-time student assistance.

Several students were employed as members of field parties. Neil Isto, Newell, S. Dak., accompanied Mr. Wheeler on a survey trip during June and early July, and subsequently participated in excavations at Angostura under Mr. Hughes. Also at Angostura as student helpers were Glenn Kleinsasser, Freeman, S. Dak.; and Donald K. Barnes, University of Missouri.

LABORATORY ACTIVITIES

The field headquarters, staff offices, and laboratory of the Missouri River Basin Survey were located throughout the year in the Laboratory of Anthropology of the University of Nebraska. In anticipation of a marked expansion of Survey activities in the near future, negotiations were under way at year's end for additional laboratory, processing, and storage space at the Lincoln Air Base. As in the preceding year, storage space for field equipment and garaging for the Survey's vehicles were maintained at the Base.

In the laboratory, the basic project files, including site survey records, artifact and photograph files, and other relevant data, were maintained and expanded. Reserve files containing duplicate records of all material in the basic site files were also maintained.

The reference map file, including topographic, geologic, land survey, ownership and other types of maps frequently needed for planning or other purposes, was expanded by 218 additional sheets during the year. It now totals approximately 985 maps.

Drafting and map-making by the Survey have gone ahead steadily; as in previous years, this was done largely with part-time student help. Completed during 1949 were 20 profile sections and house floor plans for sites excavated in 1948 at Medicine Creek Reservoir, Nebraska; site location maps for 10 reservoir areas, including Bixby, Boysen, Cannonball, Davis Creek, Edgemont, Harlan County, Mullen, Onion Flat, Oahe, and Pomme de Terre; nine maps of sites in Angostura Reservoir area; and one general map of the Missouri Basin showing reservoir sites investigated for archeological and paleontological remains to the end of calendar year 1948.

In the darkroom 646 negatives were processed, including many returned from field parties and others made in the laboratory. These latter included upwards of 50 plates of selected typical artifacts from Medicine Creek and Angostura Reservoirs, many of which are intended for illustrative purposes in forthcoming publications. Black-and-white prints made during the year numbered 1,392, in addition to 72 enlargements for publicity and other related purposes. Transparencies processed numbered 146, most of them colored. A considerable portion of the time of the darkroom assistant was given over to the reflex copying of field records; about 2,000 sheets were made up by this method and added in the appropriate location to the project files.

The relatively limited amount of field work in which Survey personnel was engaged during the year, and the survey nature of much of what was undertaken, resulted in an appreciably smaller than usual flow of specimens from the field to the laboratory. A total of 15,857 specimens was processed, i. e., cleaned, cataloged, and stored, during the year. The restoration and repair of outstanding or representative pieces was carried on to a limited extent, including the restoration of 16 pottery vessels from Medicine Creek and of one from Oahe Reservoir. The bead-laden skeleton of an adolescent from the Woodruff Ossuary (site 14PH4) in Harlan County Reservoir was mounted for display, and has been placed temporarily on exhibit in the museum of the Nebraska State Historical Society in the State capitol in Lincoln.

As in previous years, the laboratory sent out for expert examination and report the animal bone, shells, and vegetal material shipped in at various times by field parties. From the identified material returned to Lincoln, a comparative collection of Missouri Basin molluscan shells and animal bone has been started, in the hope of facilitating future tasks of preliminary identification. A similar series of human skeletal remains for preliminary comparative work is also being started. It is gratifying to note that the accumulating collections of documented animal bone from various archeological periods and localities throughout the Missouri River Basin promise to contribute significant data toward elucidation of several specific problems, including, for example, such matters as the evolution of the domestic dog, changing faunal assemblages and varieties throughout time and space, and the varied utilization of native fauna by Indian groups at various periods of time.

With regard to publication and dissemination otherwise of information gathered in course of field and laboratory studies, the Missouri River Basin Survey has continued to furnish the National Park

Service with mimeographed appraisals of the archeological and paleontological resources of reservoirs investigated. During calendar year 1949, three preliminary statements on reservoirs not previously reported were distributed; and two supplementary statements containing revised appraisals of reservoir localities previously reported on were issued. Preliminary appraisals included statements on Davis Creek Reservoir site, in Nebraska; on Cannonball Reservoir, in North Dakota; and on Philip Reservoir site, in South Dakota. Supplementary statements were issued on Dickinson Reservoir, North Dakota, and on Shadehill Reservoir, South Dakota. Other preliminary reports completed but not distributed at year's end included: Bixby Reservoir, South Dakota; Moorhead Reservoir, on the Montana-Wyoming line; Rockyford Reservoir site, South Dakota; and Onion Flat, Raft Lake, and Soral Creek Reservoirs in Wyoming.

Eight papers dealing with archeological salvage operations in the Missouri River Basin during 1948 were published in the April 1949 issue of American Antiquity, quarterly journal of the Society for American Archeology. These included three reports by River Basin Surveys personnel, four by representatives of cooperating agencies, and one by the writer as Field Director of the Missouri River Basin Survey. Papers prepared by staff members of the Lincoln office and by the writer included the following titles: "Recent Investigations in Fort Randall and Oahe Reservoirs, South Dakota," by Paul Cooper; "Investigations in Western South Dakota and Northeastern Wyoming," by Jack T. Hughes; "Archeological Investigations in Medicine Creek Reservoir, Nebraska," by Marvin F. Kivett; and "Some Provisional Correlations in Missouri Basin Archeology," by Waldo R. Wedel.

A summary report prepared by the then Field Director on the activities of the Missouri River Basin Survey during calendar year 1948 was awaiting publication by the Smithsonian Institution as the year ended.

As in past years, the Lincoln office of the River Basin Surveys continued to furnish information, as requested, to the daily press, to various periodicals, and to other agencies and individuals. Archeologists in the field on several occasions addressed local groups interested in the excavations and findings in their particular localities.

Staff members in the Lincoln office participated in the sessions of the Seventh Plains Conference for Archeology, held at the University of Nebraska, in Lincoln, on November 25–26, 1949.

FIELD WORK AND EXPLORATIONS

During calendar year 1949, field work was carried on in the Missouri River Basin by two units of the River Basin Surveys. These were

concerned exclusively with archeological researches, including surveys and excavations. Even this limited amount of field work, tragically inadequate in the face of the growing needs of the salvage program, were possible only because of transfer of funds by the National Park Service and the Bureau of Reclamation over and above the regular allotments received earlier in the fiscal year 1949.

The survey work began on May 27, when Richard P. Wheeler, archeologist, left Lincoln on a 46-day reconnaissance of 10 reservoir sites in North and South Dakota, Montana, and Wyoming. Assisted after June 2 by Neil Isto, student helper, Mr. Wheeler spent 1 to 4 days each at the following projects: Bixby, Philip, Rockyford, and Shadehill Reservoir sites in South Dakota; at Cannonball and Dickinson Reservoir sites in North Dakota; at Onion Flat, Raft Lake, and Soral Creek Reservoir sites in Wyoming; and at Moorhead Reservoir site on the Montana-Wyoming State line. The field work terminated early in July, and Mr. Wheeler returned to Lincoln on the 11th of the month to compile reports on his researches and then to prepare for further field assignment.

Under an emergency allotment received in June 1949 from the Bureau of Reclamation, the intensive surveys and excavations begun during the summer of 1948 at Angostura Reservoir, South Dakota, were resumed in early July. Jack T. Hughes, archeologist, was again placed in charge of this unit. He was aided in the field by George Metcalf, field assistant, J. M. Shippee, expert laborer, and a work force consisting of students and local labor. On September 3, Richard P. Wheeler replaced Hughes as field supervisor, and continued the excavations until November 8, when he returned to Lincoln for the winter.

Of the 11 projects where field work was conducted during 1949, 8 had not been previously surveyed by River Basin Surveys personnel for archeological materials. These included Bixby, Philip, Rockyford, Cannonball, Onion Flat, Raft Lake, Soral Creek, and Moorhead. Shadehill and Dickinson had been visited very briefly in 1946, and preliminary reports on their archeological possibilities were issued in 1947. All of the units listed above except Raft Lake were surveyed in preliminary fashion in 1947 for paleontological remains, and brief reports on this phase of the salvage operations were issued in August 1948. No paleontological field work was possible in the Missouri River Basin during 1949, owing to inadequate funds.

NORTH DAKOTA

Archeological work by the River Basin Surveys in North Dakota during 1949 consisted of reconnaissance at two Federal water-control projects. Cannonball Reservoir site, in Grant County, was surveyed

during the period June 10–14; and on June 15–17, additional investigations were made at Dickinson Reservoir, first surveyed by the River Basin Surveys in 1946. Both units visited lie on westerly tributaries of the Missouri. The field party consisted of Richard P. Wheeler, staff archeologist, and Neil Isto, student helper.

Cannonball Reservoir site.—The site of the Cannonball Reservoir, an irrigation and flood-control project of the Bureau of Reclamation, is on Cannonball River in Grant County, southern North Dakota, some 60 miles west of the Missouri River. An earth-fill dam, now under construction about 5 miles southeast of Elgin, will rise 131 feet above stream bed; it will have a crest length of 1,690 feet, plus a dike section 4,310 feet long at the west end. The conservation pool (elevation 2,222 feet, m.s.l.) will have a surface area of 6,750 acres; at superstorage (elevation 2,269 feet, m.s.l.), the area flooded will be about 8,750 acres, and the pool will extend more than 25 miles upstream from the dam.

In the future pool area, the Cannonball meanders through a broad valley bordered by bluffs and lined with well-developed erosional terraces. The valley, as well as the rolling uplands to north and south, are covered with short grass. Trees occur sparingly, chiefly as small, scattered groves of cottonwood and box elder along the stream banks and in the adjacent coulees, with occasional juniper and aspen on the steeper valley slopes.

Approximately 4 days were devoted to the preliminary survey of the Cannonball Reservoir site in 1949. Only the lower 2 miles of the future pool area were thoroughly inspected; above this section, spot checks were made to a distance of about 19½ miles above the dam site.

Five sites of archeological interest, i. e., areas marked by surface features or refuse concentrations, were located and recorded, besides which a few scattering occurrences of stone artifacts and chips were noted here and there on the ground surface. Four of the sites consisted of boulder circles or tipi rings. Two of these were marked by a single boulder circle each; a third, 32GT20, in a borrow area near the dam site, consisted of 15 circles ranging in diameter from 15 to 20½ feet; and the fourth included two clusters of rings. No artifacts were found on or near any of these tipi-ring sites.

The fifth site yielded projectile point fragments, knife fragments, a stone drill, and miscellaneous chips, flakes, and spalls. No pottery was found, and limited tests revealed no artifacts or refuse below the sod. The site is believed to represent a temporary camp, but there are insufficient data to permit an estimate as to its age or cultural affiliations.

The results of the 1949 reconnaissance at Cannonball Reservoir do not suggest a great abundance of archeological remains or materials

of any marked antiquity. Since only about one-fifth of the future pool area was examined however, it seems evident that further studies will be required before a final appraisal of the archeological resources here can be made. Since initial water storage is scheduled for 1951 or 1952, survey of the unexplored sections of the reservoir area should be completed at an early date.

On the basis of the 1947 paleontological survey, there appears to be no need for further salvage work in that line at Cannonball, barring unexpected finds during construction operations.

Dickinson Reservoir site.—The Dickinson Dam and Reservoir, an irrigation, flood control, and municipal water-supply project of the Bureau of Reclamation, is nearing completion on Heart River in Stark County, southwestern North Dakota. An earth-fill dam 49 feet high and having a crest length of 2,270 feet is under construction about 2 miles west of the town of Dickinson. At flood-control storage, the reservoir surface will be at 2,424.4 feet, m. s. l., and will have an area of 1,650 acres. The reservoir will have a length of about 4 miles, occupying the Heart River Channel and the lower portions of several tributary coulees.

Like neighboring streams to the north and south, the Heart River meanders through a moderately wide valley bordered by rolling uplands. In the reservoir area, there are extensive bottom lands and low terraces, frequently cut by old stream channels. Timber is sparse and of small size; where the land is not under cultivation, grass predominates.

Portions of the Dickinson Reservoir area were surveyed in preliminary fashion by a River Basin Surveys field party consisting of Paul Cooper and J. J. Bauxar on August 17 and 18, 1946. At that time, only two localities of possible archeological interest were noted: One on the north bank of the river just above the dam site, where a few modified flakes and refuse were found; the other on the south side below the dam site, where there were a few fragments of bone. Near this latter spot, according to a local informant, an Indian burial accompanied by a fragment of pipestone was unearthed previously.

In 1949, portions of 3 days were spent in further reconnaissance, chiefly in sections not visited during 1946. A few surface artifacts were found, including a side-notched projectile point, a drill point, a knife, and what is possibly an awl fashioned from the fibula of a horse; and from a cut bank on the east side of Ash Coulee, 30 inches below the ground surface, were taken six bison bones. No occupational, burial, or other sites worthy of detailed investigation were seen by, or reported to, the Survey party.

It is possible that the heavy brush and grass cover in the reservoir area has obscured some archeological remains, or that older material has been buried by deposition. The generally negative results of the

two surveys made, however, suggest that no remains of importance will be lost by construction of Dickinson Reservoir. Unless construction or other developmental operations uncover remains of which no indication has so far been forthcoming, no further archeological work is recommended for this project.

The 1947 paleontological reconnaissance indicates that no serious loss of fossil remains will take place at Dickinson, unless construction uncovers materials not now apparent.

SOUTH DAKOTA

Much the greater portion of the 1949 field work of the Missouri River Basin Survey was carried on in various water-control projects in South Dakota. All of these operations, including surveys at four proposed and active projects as well as excavations at a fifth now nearing completion, were on tributaries of the Missouri west of the main stem.

The surveys, beginning in late May and continuing into early June, were made by Richard P. Wheeler, assisted after June 2 by Neil Isto, student helper from Newell, S. Dak. Leaving Lincoln on May 27, Mr. Wheeler visited the following projects in South Dakota: Rockyford, on the White River in Shannon County, May 29–30; Philip, on Bad River in Haakon County, May 31–June 1; Bixby, on Moreau River in Perkins County, June 4–5; and Shadehill, on Grand River in Perkins County, June 6–9. From this point, the party continued northward for further surveys in North Dakota and elsewhere.

In continuation of detailed investigations begun in 1948, intensive researches were carried on from July 10 until November 8, 1949, at Angostura Reservoir site, on Cheyenne River, southeast of Hot Springs. The field party here was under supervision of Jack T. Hughes, archeologist, until September 3; during the remainder of the season, Richard P. Wheeler was in charge.

Angostura Reservoir site.—Site of the Angostura Dam and Reservoir, an irrigation project now nearing completion by the Bureau of Reclamation, is on Cheyenne River about 9 miles south and east of Hot Springs, in Fall River County, S. Dak. The dam, approximately 130 feet high, will create a pool a mile or more wide extending southward nearly 4 miles, from which point it will narrow rapidly to the head of the pool 6 or 7 miles farther west. An arm of the reservoir will extend 3 or 4 miles to the southeast up the valley of Horsehead Creek, and there will be a shorter embayment in the lower valley of Dry Creek below Jackson Narrows.

The archeological explorations here in 1948 had disclosed some 71 sites in and near the future pool area. As indicated in a previous

report in this series, that for 1948, none of the sites showed evidence of long occupancy, but there were good indications that many of the sites had been occupied repeatedly by small groups whose cultural equipment varied from period to period. For the most part, the sites yielded only stone artifacts suggestive of hunting and gathering economies; at three, small quantities of pottery were found. The range of time represented is somewhat uncertain, but was believed to cover a span of perhaps several millenia, extending up to shortly before the historic contact period. Owing to the relatively low yield from nearly all sites and the consequent need for extensive excavation on a large scale, the 1948 work consisted largely of what we may term intensive testing or sampling.

The 1949 investigations represented an extension and intensification of the work done in 1948. No attempt was made at complete excavation of any of the known sites. Instead, some 12 or 15 of the more promising ones, which also appeared to be representative of the several horizons thought to be present in the reservoir area, were tested by means of trenches and pits. The artifact yield, in general, continued disappointingly low; but the data will doubtless be adequate to allow the partial delineation of several more or less distinct complexes which evidently existed at different periods of time.

With initial storage of water scheduled to begin in the spring or early summer of 1949, the first work was necessarily directed to further exploration of several nonpottery sites situated on terraces to be flooded just above the dam. These included particularly sites 39FA10, 39FA56, and 39FA68, all lying about the junction of small waterways draining Red Canyon and Sheps Canyon a few hundred yards southwest of the dam. At 39FA10 (pl. 13, *a*) some 3 feet of sand was found to overlie a hardpan; within this sand were three culture-bearing zones separated and capped with light sterile deposits, the lowest of which lay directly on hardpan. Within the culture-bearing zones were hearths of various kinds, many flakes and chips, occasional bone fragments, and some artifacts, but no pottery. A few bits of graphite, presumably gathered for pigment, show utilization of one of the many mineral resources of the Black Hills. It is suggested that the three cultural zones represent occupation on as many separate occasions by groups whose cultural affiliations and time remain to be determined when wider comparisons have been possible.

At site 39FA56 there was evidence of two occupational levels. The upper contained pit hearths or roasting pits, with which seemed to be associated a few fragments of obsidian and occasional other materials; the lower included shallower basin-shaped hearths. Graphite is reported from this site also.

At site 39FA68, several trenches revealed a rather complicated situation. At one point there is a cultural deposit approaching 3 feet in thickness, overlain by nearly 2 feet of sterile deposit. Elsewhere, trenches from 1 to 3 feet deep disclosed windrows of burnt stones, hearths, charcoal, bone fragments, scrapers, a few blades, and various other remains. In the deepest test, a small lanceolate base-notched projectile point came to light at a depth of 6 feet. Two roasting pits are also recorded from the site. The levels are somewhat irregular, and the stratigraphy is evidently complicated by a variety of geologic features such as terrace fills, local gullying, etc. Further investigations here in 1950 are urgently needed, if possible with the assistance of geologists familiar with terrace problems.

Another series of sites investigated were four locations on Horsehead Creek, which joins the Cheyenne some 3 miles south of the dam. Extensive test pitting was done at site 39FA23, one of the few sherd-bearing sites in the locality and situated about 3 miles up the creek, on its south bank. The site appears to be actually on an abandoned and partially filled creek channel. Here were found small projectile points, scrapers, knives, manos, cord-roughened potsherds, and animal bone. Hearths and ash lenses were rather plentiful, but no good evidence of house sites came to light. What seems to be indicated is a series of brief occupations marked by thin discontinuous culture strata separated by alluvial materials presumably deposited by periodic overflows from the creek. There is no evidence of great age or prolonged residence, or of marked cultural differences between levels. The material found is somewhat reminiscent of the Upper Republican horizon, a pre-White culture widespread in Nebraska, northern Kansas, and adjacent regions.

Less than a mile upstream, where a small gully empties from the south into Horsehead Creek, is site 39FA30. Surveys here had shown several charcoal layers exposed in the shaly walls; and on the west side of the gully, where it joins the creek, several thick, cord-roughened Woodland sherds and a small projectile point had been found in situ. Excavations at this spot disclosed several more hearths and a deeply buried fireplace, as well as another small point, but no more sherds. It is possible erosion had removed most of the pottery component prior to the 1949 work. The opposite, or east, gully wall excavation (pl. 13, *b*) disclosed a few fragments of mussel shell, fractured pebbles, and some metate fragments dissociated from any of the charcoal lenses. The charcoal layers themselves proved unproductive; and it seems probable that, instead of being old occupational surfaces successively inhabited by peoples in a prepottery cultural stage, they actually represent burned-off grass surfaces subsequently buried by sand, gravel, and alluvium from the rapidly eroding patch of "badlands" nearby to the south at the head of the gully.

An intrusive and poorly preserved flexed burial, associated with a shallow broken metate, was also found in the east slope of the gully. Its age and cultural affiliations remain undetermined.

A few hundred yards downstream from the two sites just discussed, the cut bank on the north side of Horsehead Creek showed several layers of charcoal containing animal-bone refuse. This locality, thought to represent a possible prepottery site, was designated site 39FA61. Exploratory tests nearby yielded more bones, as well as burned stone fragments, flakes, and similar detritus. Further surveys in the vicinity resulted in discovery of a well-marked hearth partially eroded out of the south bank of the creek to the southeast of the earlier finds. Test pits showed cultural debris from just below the surface of the terrace to a depth of approximately 3 feet. This included miscellaneous chips and flakes, animal bones, shell fragments, drill points, scrapers, knives, a side-notched concave-base projectile point and another of simple triangular form, and a number of cord-marked and tooled potsherds from various depths. The scarcity of pottery-bearing sites in the Angostura locality, and the better than average yield of artifacts in the limited tests made, suggest the need for further investigations at this spot.

Among the more important finds of the 1948 season at Angostura, as reported in the annual summary for that year, were the evidences of a fairly early prepottery occupation at the Long Site, 39FA65. This lies on the north side of Horsehead Creek about 3 miles above its mouth, in a proposed recreational area. Well flaked lanceolate point fragments were found here, on the surface and in situ underground, along with small circular fireplaces without stones, and quantities of paper-thin flakes from the manufacture of chipped artifacts. Despite the low yield of artifacts, it seemed evident that there were relationships between these materials and those from other early sites in the Great Plains, where artifacts of the Plainview type were coming to light.

Further investigations at the Long Site in 1949 consisted of a thorough re-examination of the entire site surface, and excavations at the more promising exposures. At Area A, where hearths and projectile point fragments were uncovered in 1948, the tip of another obliquely flaked point was found in situ. At Area B, on the east edge and slope of a gully near the western part of the archeological zone, one well-defined fireplace and several possible hearths were uncovered, as well as a mano, but no points or other diagnostic artifacts came to light. At Area C, across the gully west of B, intensive test pitting disclosed charcoal fragments, occasional flakes, and bits of what appeared to be oxidized wood, but no concentrations of occupational debris were noted. Drift material in the form of fragmentary and complete artifacts were picked up on the gully slope below Area

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C, and traces of one or two small hearths occurred at the edge of the exposure. It seems likely that the area worked here was actually peripheral to an occupational zone that was very largely destroyed by the cutting of the arroyo.

Despite the rather meager and unsatisfactory nature of the findings here in 1949, there would seem to be a good possibility of the existence between Areas A and B of additional occupational debris. The area involved covers several acres, however, and further exploration without benefit of power machinery would seem to be of dubious value and decidedly uneconomical. The stripping of overburden to whatever depth is necessary to expose a large area of the old occupational level would perhaps result in a somewhat fuller and more adequate picture of the situation.

Several sites in the middle and upper portions of the reservoir area were also tested during the 1949 season. These included two locations at which pottery occurred sparingly, namely, site 39FA45 on Dry Creek, and site 39FA48 on the south side of Cheyenne River about a mile below the mouth of Dry Creek. Meager samples only were recovered at these stations; no structural features were noted. Farther upstream, in the general vicinity of Jackson Narrows, sites 39FA35, 39FA38, and 39FA42 were briefly investigated. At the second of these, 39FA38, tests to a depth of 2 or 3 feet disclosed two dark soil zones separated and covered by light wind-blown sand. Chips, animal bones, a mano, a blade fragment, and other items came to light here, as well as a sherd from the surface. No outstanding finds were made at any of these sites.

In addition to the sites investigated in the future reservoir area, brief trips were made from time to time in search of other remains in the general vicinity. A number of interesting and hitherto unreported petroglyph groups were recorded, chiefly along the Cheyenne River above the future pool area. At one, designated 39FA78, there are many and varied drawings, including several large anthropomorphic figures resembling dancers, each of whom has a zigzag serpentine figure dangling from the mouth in what suggests a representation of a snake dancer. There is a detritus-laden talus below the cliff on which these figures occur, and some of the figures extend to a depth of several feet below the surface of this talus. Charcoal lenses and probable hearths occur at depths of approximately 2 and 10 feet in the edge of the river terrace lying between the inscribed surface and the Cheyenne River. At another site, 39FA79, a mile or two down river and just above the head of the reservoir area, several groups of figures done in varied style occur. What is evidently a recent group includes a thunderbird, feathered lances, and numerous small anthropomorphic figures carrying guns, all done in a pleasingly

precise fine-line technique. Nearby are other groups done in rather broad shallow lines, and still others which are delineated by wide lightly pecked lines. In a few places the sandstone surface has unquestionably been smoothed by rubbing in preparation for the drawings; a mano found at the base of the ledge may well have been used for this very purpose. It would seem likely that the differences in technique evidenced by these groups probably have chronological significance; but, other than the clearly late groups including representations of guns, there is no way of associating the groups at present with one or another of the prehistoric occupations with whose remains the Cheyenne River Valley abounds.

The 1949 investigations at Angostura have amplified the picture of native utilization of the area in prehistoric times, as judged from previous findings, although the broad outlines remain fundamentally the same as at the end of 1948. In general, the region appears to have been intermittently occupied by a long succession of native peoples throughout a period of perhaps several millennia. None of the sites yet investigated shows evidence of prolonged continuous occupation, or of intensive pursuit of horticulture. The pottery-bearing sites have disclosed no satisfactory evidence of semipermanent structures such as are found at sites of the semihorticultural peoples farther east and south. Such evidence may, of course, yet come to light with more comprehensive excavation. The general impression, however, is one of frequent but short-lived occupations of the locality by culturally impoverished hunting and gathering peoples, or by lightly equipped seasonal foraging parties of peoples who normally resided elsewhere. One would suppose from this that the rather varied resources of the Black Hills, including an abundance of native game animals and fur bearers, of wild fruits and berries, and of useful stones and minerals, were perhaps as important to prehistoric men as they were to the bison-hunting nomadic tribes—Cheyenne, Sioux, and others—of the historic period.

The strategic importance of the Angostura locality in working out the prehistory of the northern plains west of the Missouri River is perhaps worth emphasizing again. This importance rests on the fact that here are to be found westward extensions of pottery horizons much more fully represented to the east and south, as well as nonpottery manifestations with relationships to the west. If, from the researches preceding actual flooding of the pool area, it becomes possible to work out a reasonably sure chronological and cultural sequence of the pottery and nonpottery complexes evidently present, then the somewhat nebulous picture of native man's occupancy of a vast and little-worked region in the northern short-grass plains centering in the Black Hills area, may be measurably clarified and

sharpened. The prospects for thus establishing geographically broad correlations seem promising enough to outweigh the relatively low returns from the current investigations in terms of artifact yield.

Bixby Reservoir site.—The site of the proposed Bixby Reservoir, an irrigation and flood control project of the Bureau of Reclamation, is on Moreau River in northwestern South Dakota. The dam site is about 1 mile west of Bixby, and the future reservoir area extends westward up the Moreau about 24 miles. Dam specifications, reservoir data, and construction plans have not been furnished the River Basin Surveys, and the project appears to be inactive at the present time.

The proposed reservoir area lies approximately 100 miles west of the Missouri River, and less than half that distance northeast of the Black Hills. Here the Moreau meanders through a relatively narrow, bluff-bordered valley. Along its banks and those of its intermittent tributaries are clumps of cottonwood and box elder. The adjoining uplands are treeless and, where not under cultivation, are characterized by a short-grass flora.

In the 2 days available for preliminary survey at Bixby, only a small portion of the area could be examined. Two sites of archeological interest were noted. One of these, 39PE10, is situated less than a mile upstream from the proposed dam site, atop a small knoll on the south bank of the river (pl. 14, *b*). Here were collected some 50 fragments of pottery, sand- and grit-tempered, gray to buff in color, and undecorated; a dentalium shell bead; a mano fragment; and a miscellaneous assortment of chips, blades, cores, and other oddments. The chronological position and cultural affinities of this material cannot be determined from the evidence available at the moment.

The second site lay about 2½ miles to the west, in a short arroyo south of the river. A few small chipped flint artifacts, along with refuse chips, flakes, and weathered animal bone, were found here on the sandy, sloping surface of the arroyo. There were no sherds, and it is possible that a preceramic or nonceramic complex is represented.

In view of the uncertain status of Bixby with regard to construction, no further work is recommended for the present. Should the project become active, however, it would seem worthwhile to initiate test excavations at the two sites found, and also to investigate thoroughly the remaining portions of the future reservoir area.

At present, there appears to be no need for paleontological salvage work at Bixby, unless construction discloses material not now known.

Philip Reservoir site.—The site of the proposed Philip Reservoir, an irrigation and flood-control project of the Bureau of Reclamation, is on the North Fork of Bad River, in southern Haakon County,

S. Dak. The dam, for which alternate sites are proposed, is to be 2½ to 3 miles west of the town of Philip. The reservoir will flood portions of the North Fork and Mexican Creek Valleys for a distance of about 5½ and 2 miles, respectively, above the dam. The project is inactive at present.

The reservoir site lies about 100 miles west of the Missouri River and approximately the same distance east of the Black Hills, along a natural route for hunting parties traveling from the main stem villages to the hunting grounds of the upper Cheyenne River Basin. The stream valleys are narrow and thinly timbered with hardwoods; the adjoining uplands are covered with short grass and cactus. It is not a locality that would be expected to invite prolonged occupancy by semisedentary peoples.

In the 2 days devoted to search of the proposed reservoir area, no sites or materials clearly of archeological significance were seen. Occasional chips collected on the ground surface may have been produced by natural rather than human agencies. No further archeological work seems called for here, unless future construction activities bring to light promising materials of whose existence there is now no visible evidence or other record.

The 1947 paleontological survey suggests that further search for fossils should be made in the Pierre shale exposures at Philip if the project becomes active.

Rockyford Reservoir site.—Rockyford Reservoir, a Bureau of Reclamation project for irrigation and flood control purposes, is proposed for a site on White River, near the northern boundary of the Pine Ridge Indian Reservation in Shannon County, S. Dak. The dam is to be situated about 1 mile north of the town of Rockyford, whence the reservoir will extend some 17 miles upstream. Dam specifications and additional reservoir data were not available at time of the survey, and the project appears to be currently inactive.

In the locality of the proposed reservoir, the valley of White River is cut into the fossiliferous Oligocene White River formation which here, as elsewhere in the drainage of the White, gives rise to a sparsely vegetated and rather rugged badlands terrain. Erosional terraces are extensively developed in the locality, and include a flood plain much wider than would be expected from such a comparatively small stream as the present White.

The 1949 survey was restricted to an examination of both sides of the valley in the vicinity of the dam site, plus a search of the flood plain, terraces, and ravines on the east side of river upstream to the bend above the mouth of Wounded Knee Creek, some 4 or 5 miles above the dam site. The west, or left, bank of the stream in the future pool area remains unexplored.

Three sites of archeological interest were recorded, and sample collections of surface materials were made at all three. Nonpottery materials only are represented.

Two of the sites, 39SH1 and 39SH2, are situated in terraces; the third, 39SH3, lies atop a small flat-topped butte comprising the remnant of one of the higher terraces. Especially promising is site 39SH1, which is on the east side of the valley approximately 3 miles south of the dam site (pl. 15, *a*). Here, about a mile west of a prominent feature known locally as Chimney Butte, a well-marked occupational stratum covered by as much as 3 to 4 feet of sandy soil has been exposed around the terrace edges. Eroding from this stratum are animal bone refuse, chips, flakes, worked stone artifacts, and similar vestiges of former human activity. In the containing matrix may be seen bits of charcoal and occasional streaks of ash. In the two visits made to the site by River Basin Surveys personnel, in June 1948, and again in May 1949, specimens collected included corner-notched projectile points, blade and knife fragments, end scrapers, drills and gravers, mano (?) fragments, and refuse bone. The consistent absence of pottery, as noted by all observers to date, and the topographic position of the deposit at some depth beneath the terrace surface, suggests the possibility that a moderately early preceramic complex may be represented; but there are insufficient data at hand to warrant assignment of the materials to any of the known archeological complexes or horizons of the western plains.

At site 39SH2 a few flakes, cores, and chips were collected on the eroded slope below the terrace surface, and in a nearby draw some bone fragments and chips were noted about 6 inches below the terrace surface. Neither this nor the third site, 39SH3, where worked stone and refuse were noted only on the present ground surface, seem quite so promising as the first one described.

In the event that the Rockyford Reservoir project becomes active, it will be advisable to develop a program for further investigations in the area. Because of their promise of yielding additional information on the little-known preceramic occupations of the Badlands locality, extensive systematic testing and perhaps large-scale excavation would seem advisable at site 39SH1 and possibly at 39SH3. Further survey is also needed in those parts of the reservoir area not yet searched, which lie mainly on the west side of the White River.

In view of the extensive exposures of White River deposits and their high fossil content, further paleontological work may be needed here if Rockyford becomes an active project.

Shadehill Reservoir site.—The Shadehill Reservoir, an irrigation, flood-control, and water-supply project of the Bureau of Reclamation, will be located at the junction of the North Fork and South Fork of

the Grand River in northeastern Perkins County, S. Dak. An earth-fill dam and dike, now under construction about 14 miles south of Lemmon, will have a maximum height above stream bed of approximately 120 feet and a total crest length of some 13,000 feet. The conservation pool, at an elevation of 2,272 feet, will cover approximately 4,850 acres; superstorage at 2,312 feet will inundate approximately 12,250 acres. At maximum pool level, the reservoir will occupy about 3.5 miles of the main valley, plus some 23 miles in the North Fork Valley and 18 miles in the South Fork Valley.

A preliminary visit was made to Shadehill by a River Basin Surveys party in August 1946. In less than two days' work, the following features were noted: a possible tipi-ring site with flint chips, three areas marked only by flint chips, two stone piles and two depressions of unknown significance, and three deposits of bone that were thought to be of possible paleontological interest. No sites of great size or obvious importance came to light, but the desirability of further investigations was indicated.

The 3 days spent at Shadehill in May 1949 were devoted to a careful recheck of the area about the dam site and to a search of the previously unexplored portions of the pool area on the North Fork. A few specimens were collected, including four side-notched projectile points, two knives or scrapers, a hammerstone, chips, flakes, cores, and animal bones; but there were no concentrations of material or other evidences of occupational or burial sites.

The apparent scarcity or absence of sites that would seem to warrant further investigation is rather surprising, since the valley of the Grand appears to offer a logical natural route of east-to-west and west-to-east travel. The reservoir area lies less than 100 miles west of the Missouri, and would seem to be within the range of territory doubtless visited by the Arikara, Mandan, and perhaps other tribes formerly resident along the main stem in northern South Dakota and southern North Dakota. Ludlow Cave, from which chipped-stone implements, bone and shell artifacts, coiled basketry fragments, and potsherds suggesting "a generalized Mandan-Hidatsa type" have been reported, is approximately 60 miles to the west, on the headwaters of the South Fork. Surface deposits in the same site yielded metal projectile points, glass beads, and other objects evidently left by hunting peoples of the historic period. One would suppose from this that the valley of the Grand would have been a frequently used route of travel in prehistoric and historic times, and that the banks of the stream would show plentiful evidence of that fact.

It is possible, of course, that such sites as may once have existed here have been destroyed by cultivation or are obscured by water- or wind-deposited soils and vegetation. At the moment, however, no

further archeological work seems to be called for; nor, judged by the 1947 paleontological survey, will there be need for further investigations along that line. Should construction activities or related operations uncover archeological or paleontological remains not now known, the above recommendation would, perhaps, be subject to revision.

WYOMING AND MONTANA

Archeological researches by the River Basin Surveys in Wyoming and Montana during 1949 consisted exclusively of reconnaissance at four proposed Bureau of Reclamation water-control projects. Projects visited, in all cases for the first time by archeological survey units, included: Moorhead Reservoir site, on Powder River in Montana and Wyoming; and three small projects—Onion Flat, Raft Lake, and Soral Creek—in the upper Big Horn River Basin, in west central Wyoming.

The proposed Soral Creek and Raft Lake Reservoirs lie within the Wind River Indian Reservation. Grateful acknowledgment is here made to the Business Council of the Shoshones and Arapahoes for granting permission to the River Basin Surveys for the surface investigations.

The work at these four projects was carried out by a field unit consisting of Richard P. Wheeler, archeologist, and Neil Isto, student helper. This party operated on the following schedule: Moorhead, June 19–23; Onion Flat, June 28–29; Soral Creek, July 1–2; and Raft Lake, July 5–7.

Moorhead Reservoir site.—The site of the Moorhead Dam and Reservoir, an irrigation and flood-control project now under construction by the Bureau of Reclamation, is on Powder River in southeastern Montana and northeastern Wyoming. The dam, situated less than 2 miles south of Moorhead, Mont., will be an earth-fill structure 220 feet high, with a crest length of 2,700 feet exclusive of a 550-foot dike section at the west abutment. The flood control pool (elevation 3,542.5 feet, m. s. l.) will have a surface area of 18,300 acres, extending approximately 32 miles upstream from the dam through Powder River County, Mont., and into Sheridan and Campbell Counties, Wyo. Initial storage of water is scheduled for the spring of 1952.

The Powder River rises in the arid plains of central Wyoming and, through its western tributaries, drains much of the eastern slope of the Big Horn Mountains. In the reservoir area, it is a silt-laden stream meandering sluggishly through a wide, alluvial valley. Erosional terraces are well developed; occasionally, in cut banks above the present flood plain, buried soil zones may be observed. The valley margins are hilly to rugged in character, often with "badlands" areas. Straggling stands of cottonwood, willow, box elder, and ash

grow on the sand bars and along the stream banks, while juniper and yellow pine cover the "breaks" flanking the valley. Short grass is characteristic of the locality generally.

In the 5 days devoted to preliminary survey at Moorhead in 1949, a careful inspection was made of both sides of the river to a distance of about 5 miles above the dam site, including also the lower portions of Dry and Bitter Creeks. In addition, spot checks were made here and there along the east bank of the stream to a point about 20 miles above the dam site. The investigations resulted in the locating of four archeological sites.

Two of the sites, lying on opposite sides of the river just above the mouth of Clear Creek in the upper part of the future pool area, Sheridan County, Wyo., consisted of boulder circles or tipi rings ranging in diameter from 14½ to 21 feet. No cultural material was found on or near either of these sites.

Two other sites lay about a mile southwest of the dam site, on the west side of the valley (pl. 14, *a*). Cultural debris collected from the surface included fragmentary projectile points, broken blades, scrapers, chips, spalls, and bones. No hearths or other features were noted, and limited tests disclosed no evidence of subsurface occurrence of refuse or artifacts. Both sites are thought to represent temporary camps; but in the absence of a definitive sample of the archeological complexes represented and until a chronological and cultural framework has been worked out for the region, none of the remains can be assigned to a definite time period or cultural horizon.

None of the four sites seen are believed to merit further investigation. In view of the relatively small portion of reservoir area examined, however, and because the reservoir is situated in an area about which virtually nothing is known archeologically, it is recommended that a comprehensive survey of the entire pool area be made before flooding takes place. The project lies in an area where little evidence of semisedentary pottery-making peoples would be expected, but there would seem to be an excellent chance of finding remains of preceramic or other nonceramic hunting and gathering complexes. Indications of such remains have been reported from the Yellowstone Valley, into which the Powder empties a few miles southwest of Terry, Montana, and also to the southeast in Keyhole and Edgemont Reservoir sites in the Belle Fourche-Cheyenne drainage. It is possible that a painstaking search of all cut banks and other exposures in the Moorhead Reservoir area would disclose significant remains not now known to science.

In the limited time spent at Moorhead during the 1947 paleontological reconnaissance, no identifiable fossils were obtained.

Onion Flat Reservoir site.—The site of the proposed Onion Flat Dam and Reservoir is on Devil Dive Creek, a small dry tributary of

the Little Popo Agie River about 10½ miles southeast of Lander, Fremont County, Wyo. A dam some 1,680 feet long, with a dike section at each end, will impound water to be diverted from Little Popo Agie to form a pool extending approximately 1½ miles upstream.

The future pool site is a broad valley with gently sloping sides and a shallow meandering stream channel, which is usually waterless. Trees are absent; the valley slopes and bottoms are covered with a luxuriant growth of sagebrush and short grass. In its present condition, the locality would seem to offer little inducement to occupancy by native peoples.

Two days' search of the reservoir area by the River Basin Surveys field party resulted in discovery of a single site of archeological interest. This is situated about 225 yards northwest of the downstream face of the proposed dam. Here, in a relatively restricted area some 40 yards across, cultural materials were collected as follows: three projectile point fragments, two scrapers, a drill point, one complete and five fragmentary manos, five hammerstones, a chopper, cores, chips, and animal bones. No hearths or other structural or habitational features were noted and limited tests disclosed no cultural materials below the surface. It is presumed that the site represents a temporary camp; its cultural affiliations and chronological position cannot be determined from evidence at hand.

No further archeological or paleontological salvage work is recommended for Onion Flat Reservoir site, unless construction activities disclose important materials not now apparent.

Raft Lake Reservoir site.—Raft Lake, source of the North Fork of the Little Wind River, is picturesquely situated about 19 miles due west of the town of Wind River, in western Fremont County, Wyo. It lies just east of the Continental Divide, at an elevation of about 10,000 feet, and is about 1½ miles long. The proposed dam, in a deep gorge just below the present outlet, will raise the present water surface somewhat.

Much of the lake margin consists of rugged-to-precipitous granite walls, with little ground suitable for sustained human occupancy. At the northeast end there is a small sand-dune area. Narrowleaf cottonwoods, willows, and aspen fringe the lake, and the nearby slopes bear heavy stands of juniper, lodgepole pine, spruce, and fir.

Two days were spent in examining the locality by boat and afoot. No evidence of aboriginal occupancy was noted.

No further archeological salvage work is recommended for Raft Lake Reservoir site.

Soral Creek Reservoir site.—Site of the proposed Soral Creek Reservoir is on the North Fork of the Popo Agie River, about one-quarter mile above the mouth of Soral Creek and some 18 miles by road south of the town of Wind River, in Fremont County, Wyo.

The reservoir will be a small one, extending upstream about 1.6 miles from the dam site. The valley to be flooded is narrow, and is bordered by sandstone cliffs and steep bluffs. The valley floor and slopes are covered with grass and sagebrush; a few pines may be found along the cliff tops and clumps of willow are scattered along the creek banks.

Search of the future pool area and adjacent slopes disclosed a few scattered flint chips, two groups of animal bones without associated cultural material, and some markings on the cliffs. The bones have been identified as those of dog, bear, deer or antelope, bison, cottontail rabbit, and possibly sheep. The chips may have been caused by natural agencies. The cliff markings appear to be modern, perhaps the initials of ranchers; no Indian petroglyphs were found.

There would seem to be no need for further archeological or paleontological salvage operations in the Soral Creek Reservoir area.

FIELD WORK BY COOPERATING AGENCIES

It is a pleasure to report that several of the State-supported agencies which had participated in scientific salvage work during 1948 were again active in 1949. This cooperative work was particularly timely in view of the very limited scope of operations that could be undertaken by the River Basin Surveys. In Nebraska there were three cooperating organizations working in as many different water-control projects. On a smaller scale the same sort of work was done in Kansas, Montana, and North Dakota. As in previous years, no Federal funds were available to support these researches; all the operations were on a voluntary and unsubsidized basis. It is gratifying to report that at year's end there were indications of a substantial improvement in this latter respect, with procedures under consideration whereby the National Park Service would provide financial assistance on a contractual basis to qualified cooperating agencies.

In the pages which follow, I have sought to present brief summaries of the outstanding findings by the several cooperating agencies in 1949. It is to be hoped that more extended and definitive statements will be offered in due course by those directly connected with the work. My remarks here are based primarily on data provided in progress reports made from time to time by these agencies, in accord with their agreements with the River Basin Surveys. In those few instances where no such reports were furnished, my comments will rest largely on bits of information gotten from field personnel and thus will be even less complete than would be desirable. In a few instances it was possible for River Basin Surveys representatives to visit the scenes of activity by cooperating groups. I am grateful to the agencies

concerned and to their representatives for making available such advance data as are here offered.

KANSAS

Cooperative archeological investigations in Federal water-control projects in Kansas were carried on in 1949 as part of a larger field research program sponsored by the Museum of Natural History of the University of Kansas. The work was done by students under the direction of Dr. Carlyle S. Smith. It involved rechecking of certain sites in two proposed Bureau of Reclamation reservoir areas previously visited briefly by River Basin Surveys personnel, namely, Cedar Bluff on the Smoky Hill River and Wilson on the Saline River; and preliminary reconnaissance in a small portion of a third proposed reservoir, Glen Elder on the Solomon River, where no survey had previously been attempted by the River Basin Surveys.

Cedar Bluff Reservoir site.—The Cedar Bluff Reservoir, a project of the Bureau of Reclamation, will be situated on Smoky Hill River about 18 miles south of Wakeeney in Trego County, Kans. It is an earth-fill structure with a height of 204 feet and a crest length of 12,515 feet. When full, the pool will be about 14 miles long and will have a maximum width of about 2 miles. The terrain which will be directly affected is part of the short-grass plains; small clumps of cottonwood and willow occur along the river banks, and juniper is to be found on the valley slopes.

Of the four sites recorded here by the River Basin Surveys party in 1947, two were briefly reexamined in 1949. They are situated about one-half mile apart and approximately 2 miles upstream from the proposed dam site. One is designated 14TO2, the other 14TO3. The surface of the first was littered with flint chips, besides which fire-cracked stones and occasional chipped-stone artifacts were noted. Among the artifacts were broken end scrapers, side scrapers, and knives, as well as a crudely made projectile point with broad stem and thick blade. Several small test pits revealed undisturbed subsoil immediately below the plowed zone; no layer of refuse or occupational debris was manifested. It is possible that additional tests on a larger scale, made when crop and soil conditions are more favorable for search than at the time of the two brief visits in 1949, would disclose more remains.

At 14TO3, chips and a few fragments showing secondary work were found on the surface. No recommendation for further investigation here has been made.

In general, it does not seem likely that materials of great scientific importance are threatened by the Cedar Bluff Dam and Reservoir.

In view of the virtual absence of data on the archeology of the locality, however, it seems advisable that a thorough search be made of all remaining unexplored portions of the future pool area.

Glen Elder Reservoir site.—The site of the proposed Glen Elder Dam and Reservoir, an irrigation and flood-control project of the Bureau of Reclamation, is on the Solomon River in Mitchell County, north central Kansas. The dam site is just above the town of Glen Elder. Specifications are not available, but it appears that the reservoir will flood the Solomon Valley for some 10 or 12 miles to the west from Glen Elder, including both the North Fork and South Fork into eastern Osborne County.

With the assistance of a local collector, the University of Kansas party located and recorded two sites that are subject to destruction and six outside the future pool but in the immediate locality.

Both of the former are pottery-bearing sites, although pretty certainly of distinct cultural affiliations and different temporal position, and both lie very close to what will be the work area if and when dam construction gets under way. Site 14ML1 is on a lofty hilltop at the west edge of Glen Elder, overlooking the Solomon River. Already partly destroyed by a gravel pit at its southern edge, the site will undoubtedly suffer further damage and possibly complete destruction from the dam, the north end of which will reach the present gravel pit.

In the limited time available for survey work here in 1949, only two small test trenches were attempted. One disclosed a small basin-shaped pit containing limestone fragments and a few potsherds. The other yielded a cache of planoconvex end scrapers and prismatic knives. A painstaking search of the surface, part of which was covered with growing corn and alfalfa, netted several hundred sherds and a number of stone artifacts. The work in general confirmed the observations of previous investigators, also based on surface collections and very limited test pitting, that the site is rather distinctive ceramically by comparison with other known village sites of Kansas. There are apparently close similarities to site 25HN39, recorded in 1946 by a River Basin Survey field party on Prairie Dog Creek in Harlan County Reservoir site, Nebraska, and to various small sites scattered through other reservoir areas in the Nebraska region. If construction is undertaken at Glen Elder, further excavation at 14ML1 is urgently needed to define more clearly the nature of the archeological complex here represented.

Site 14ML8 is located south of Glen Elder and southeast of the preceding site. It occupies part of a low terrace on the south bank of the Solomon. An abundance of mussel-shell fragments and oc-

casional sherds of prehistoric Upper Republican type were found here. No test digging was attempted.

Wilson Reservoir site.—Wilson Reservoir, a flood-control and irrigation project of the Bureau of Reclamation, is proposed for the Saline River in Lincoln and Russell Counties, Kans. The proposed dam site is at the eastern edge of Russell County; no specifications for the structure or for the resulting reservoir are available. It is estimated, however, that the reservoir will extend westward up the Saline approximately 20 miles to a point north of the town of Russell. An arm of the pool will extend southeastward up Hell Creek into the southwestern corner of Lincoln County.

A very brief 2-day reconnaissance by a River Basin Surveys field party at Wilson in 1947 had disclosed the location of six sites of archeological interest. At three of these, petroglyphs were noted. At a fourth, approximately one-fourth mile south of the proposed dam site, charcoal and animal bone, some of the latter burned, were found at a depth of 56 inches below the terrace surface. At another location, on the north side of the valley near the head of the future pool, tests in one of a series of grass circles disclosed bone fragments and charcoal at a depth of 8 inches. Near the mouth of Paradise Creek, which enters the Saline near the head of the reservoir, worked stone, shell and bone fragments, and a few small potsherds of unidentifiable type were found. From these findings, made at a time of year when surface conditions were not particularly favorable for collecting, it appears that further search will be in order before dam construction is completed.

The very limited operations of the University of Kansas party here in 1949 added little to the earlier record. Uncertainty regarding roads prevented a visit to site 14RU2; and a heavy fall of rain brought to early termination an effort to recheck the nearby petroglyphs. If and when the construction project is finally set in motion, further archeological investigations would seem to be in order.

MONTANA

In Montana, a small field party from the Montana State University under supervision of Carling Malouf devoted several weeks in August and early September to investigations in the Canyon Ferry area, some 15 miles east of Helena. Preliminary surveys here in 1946 and 1947 by field units of the River Basin Surveys had disclosed a total of 32 sites in and near the reservoir area, not all portions of which could be examined in the time then available for field work. A summary of the principal findings here to the end of 1947, together with a brief statement as to the character of the region involved, appears in the published report of the Missouri River Basin Survey for that year.

The 1949 investigations of the Montana State University here were devoted largely to a recheck of sites reported previously in the future pool area, plus reconnaissance downstream in search of comparative materials. Approximately 12 sites not hitherto reported were examined, and small quantities of surface material were collected. As in the previous operations, it was found that most of the sites yielded very little surface material. Chips were plentiful in many localities; but many of these were identified by the investigators as of natural, i. e., nonhuman, origin. A number of tipi-ring sites were located; numerous chips and a few projectile points associated as surface refuse with one of these groups raises the hope that a more or less distinctive point type may eventually be identified with the boulder circles.

The surface remains recovered consisted mostly of lithic materials, i. e., of chipped and other stone. No traces of pottery came to light, despite careful search; nor did the work uncover signs of any aboriginal structures, of rock carvings, or of stone alinements other than tipi rings. Tests in several supposed rock cairns suggesting burial structures yielded only negative results.

The general impression left by the findings of the university party was that of an area occupied only sporadically and for short periods of time, perhaps primarily in connection with seasonal hunting and gathering activities. At no point were remains found in such abundance or under such circumstances as to suggest intensive or prolonged and continuous occupation by communities of any appreciable size.

NEBRASKA

Three State agencies were engaged in cooperative scientific salvage operations in Federal water-control projects in Nebraska during 1949. During June and July, the second summer field session of the University of Nebraska Laboratory of Anthropology, under the leadership of Dr. J. L. Champe, continued excavations begun in 1948 at archeological sites in Harlan County Reservoir area on the Republican River. From June until early September, the University of Nebraska State Museum carried on excavations at archeological sites in Medicine Creek Reservoir under the immediate supervision of E. Mott Davis; and in addition, had paleontological parties at Medicine Creek and Harlan County Reservoirs. The Museum's field operations were under the general supervision of Dr. C. B. Schultz and W. D. Frankforter. The Nebraska State Historical Society, between June 5 and August 13, tested several archeological sites in the proposed Mullen Reservoir area on the North Loup River in Hooker County. Marvin F. Kivett, formerly on the River Basin Surveys staff and now Director of the Museum for the Historical Society, was in charge of this latter work.

A brief résumé follows of investigations and findings by these agencies at each of the areas concerned.

Harlan County Reservoir site.—This locality is situated in southern Harlan County on the Republican River just north of the Kansas-Nebraska State line, about 200 miles west of the Missouri River. It is of especial archeological interest because within the relatively restricted area to be flooded there are village sites evidently attributable to four cultural complexes representing as many distinct aboriginal occupations of the region by pottery-making peoples. These cover a time span of at least seven or eight hundred years, and possibly considerably more. Some of the earlier horizons appear to be correlated with buried soil zones or old surfaces which, since abandonment of the sites, have been covered with wind-deposited soils. The probability would seem to be very good that through the archeological remains some of these buried soil surfaces may eventually be dated, and that the suspected climatic fluctuations will then be fitted into a longe-range picture of prehistoric weather conditions.

The 1949 operations of the University of Nebraska Laboratory of Anthropology at Harlan County Reservoir were mainly a continuation of excavations begun in 1948 at site 25HN37. This site is located on the left bank of Prairie Dog Creek 3 miles from its junction with the Republican River and 5½ miles southeast of Alma, Nebr. Two house sites, resembling in most particulars the three previously opened, were excavated. One of these had evidently burned and collapsed; portions of the charred timbers and other structural elements lay on the floor in approximately their original relationship to one another, thus providing exceptionally good information on the size and construction of the original edifice. Noteworthy, too, was the finding of an iron axhead partially embedded blade down in the ash-filled fireplace of this structure. This piece, of course, furnishes incontrovertible proof of contacts, direct or indirect, between the former Indian occupants of the site and white men, and thus confirms the relative lateness of the site as judged from its relationship to other similar sites to the south and west. The source of this trade piece, whether Spanish, French, or English, must await its examination by a specialist. Other artifacts and debris recovered during the investigations were in general similar to materials recovered during the 1948 work. The site is assigned to the Dismal River culture, and probably represents a settlement of Plains Apache of approximately the late seventeenth or early eighteenth centuries.

Other sites in the vicinity were also investigated, including especially an Upper Republican house ruin at 25HN11, a half mile east of 25HN37. The evidence here, though somewhat confusing, suggests the possibility of more than one structure on the spot. Refuse and

cultural material of the usual prehistoric Upper Republican type, and considerable quantities of mussel shells, were also found here.

The evidence obtained by the Laboratory party at Harlan County in 1949, added to that from the preceding year's work at the same locality, will be a noteworthy increment to Central Plains prehistory, particularly as regards the new data for the Dismal River culture.

Two representatives of the University of Nebraska State Museum spent approximately two months in Harlan County Reservoir area salvaging fossils from the core trench for the dam and also from the borrow pits. Some fish and reptilian remains were recovered from the Cretaceous Niobrara chalk in the core trench; elsewhere, Pliocene and Pleistocene deposits yielded fragmentary mammalian specimens. These latter are reported to be of much promise in terrace studies now under way by the Museum in the Republican Valley.

Medicine Creek Reservoir site.—This locality is on Medicine Creek, a small but perennial northerly tributary of the Republican River in Frontier County, some 25 miles northeast of McCook. Extensive excavations were made here in 1948 by the River Basin Surveys in cooperation with the Bureau of Reclamation. These resulted in accumulation of a very large body of data concerning the prehistoric Woodland and Upper Republican occupations, the only two pottery-including complexes so far found within the reservoir area itself.

In 1949 archeological and paleontological investigations were carried on in the same locality by the University of Nebraska State Museum, under the immediate field supervision of E. Mott Davis. Sites investigated include 25FT41 and 25FT42, both situated on Lime Creek, and site 25FT50, on the right bank of Medicine Creek below the mouth of Lime Creek. All of these are prepottery stations long antedating the pottery-bearing sites previously worked by the River Basin Surveys and the Nebraska State Historical Society in the same locality.

At site 25FT41, the lower occupational zone, now designated zone C, which was worked by the Museum in 1947, was again explored. The limits of the zone of occupancy were extended somewhat, but little or no material of diagnostic value was recovered. At one place, bones and flint flakes were found about 4 feet above the lower zone, presumably indicating another habitation level. Approximately 8 feet above zone C and perhaps 40 feet below the surface of the terrace, still another refuse-marked zone was found. A hearth with associated burned bone, flint spalls, and several artifacts were recovered here. Most significant finds were two points apparently corresponding in all significant particulars to points found at Plainview, Tex., in association with fossil bison, and since named Plainview points. Also present were the midsection of an obliquely flaked point, several

nondiagnostic scrapers, and knives. Pieces of charred wood found in the terrace fill, both above and below the occupational zones, have been prepared for Carbon 14 dating tests. According to the University of Nebraska State Museum paleontologists in general charge of the work, the two (or three?) occupational levels at site 25FT41 occur "at the base of a Republican River Terrace 2 fill, tentatively dated as pre-Mankato (prior to climax of the Mankato glaciation)." No confirmatory faunal or paleontological evidence has yet been adduced in support of this dating.

At site 25FT42, a hearth area with bones, scrapers, and blades was partially uncovered. No diagnostic artifacts identifying the culture represented have yet come to light. Indications are that the site may have been occupied and reoccupied many times. Geologically, "the site is believed to be contemporaneous in part with 25FT41."

In the south bank of Medicine Creek some 3 miles north of 25FT41, a concentration of flint and bones was found about 7 feet below the terrace surface. Ten feet below this concentration was noted a soil zone with a hearth but without apparent artifact associations. The possibility of a third zone some 10 feet still lower down is suggested by shell fragments.

At site 25FT50, excavated in 1948 and subsequently reported in print, some time was devoted to the gathering of faunal materials which might give further clues to age of the cultural deposits. Two large portions of bison skulls, a nearly complete deer antler, and other materials were recovered south of the portions worked for archeological remains in 1948. Flint chips were noted here, but there were no diagnostic artifacts.

Paleontological work at Medicine Creek included investigations at two fossil quarries, 25FT40 and 25FT49, by students under supervision of Loren M. Toohey of the Museum. Results were not as good as those in previous seasons. Some new evidence was recovered, however, including a complete skull of a fossil beaver. These quarries are said to be of late Pliocene age. A test trench at site 25FT49 on Mitchell Creek yielded bones of carnivores, rhinoceros, camel, horse, rodent, etc. Additional work has been recommended for this locality.

Mullen Reservoir site.—The locality proposed for this project by the Bureau of Reclamation is on the Middle Loup River in northeastern Hooker County, in the heart of the Sand Hills region. Tentative plans called for a dam at one of several possible sites 5 or 6 miles east of the town of Mullen and north of State Highway 2. The proposed reservoir would extend approximately 7 miles northwest up the river valley.

Preliminary reconnaissance here by a River Basin Surveys field party in the spring of 1947 had disclosed eight sites of varied age and

origin, several of which appeared worthy of further and more detailed investigation. When the Nebraska State Historical Society was programing its cooperative salvage work in the spring of 1949, the Mullen project carried a fairly high construction priority, and early research at archeological localities near the dam site seemed called for. Subsequently it was learned that the Bureau of Reclamation work schedule had been revised and that construction at Mullen had been indefinitely postponed. It was decided, nevertheless, that the Historical Society would continue with its plans for work here, since the region is little known archeologically but has been visited from time to time by Society archeologists.

The 1949 investigations of the Society at Mullen consisted of extensive tests at several Dismal River village sites and at one very promising Woodland site. At 25HO21, on the south bank of the river directly on the axis of proposed dam site No. 2, several fireplaces, scattered post molds, and occasional small pits, but no house structures, were uncovered. Stonework and pottery were not especially plentiful, but bone artifacts were relatively abundant. Four miles upstream at site 25HO7, also on the south bank, artifacts of stone, bone, and pottery were collected, and also a single piece of iron. The cultural zone here was covered by 1 to 5 feet of sterile sand and clay. Tests were also made at sites 25HO9 and 25HO24, both on the south bank of the stream between the two preceding sites. All of these are assigned to the Dismal River culture, which is believed to represent the Plains Apache of the late seventeenth and early eighteenth centuries. It will be interesting to see whether and to what extent the material culture inventory at these Dismal River complex sites in the Sand Hills region differs from that at such culturally related sites as 25HN37 in Harlan County Reservoir area. The distance between the two localities is not great, being less than 150 miles airline; but the environmental setting of the Hooker County sites differs rather markedly from that of the Republican River Valley. When the recent findings at both localities have been reported in full, our understanding of the early historic Apache groups of the Central Plains will be very materially enriched.

The 1949 work at Mullen disclosed remains of at least two other prehistoric complexes in the locality. One of these is a Woodland manifestation represented by an interesting site lying on proposed dam site No. 1, slightly more than a mile below proposed dam site No. 2 and the Dismal River site 25HO21. Here were found heavy grit-tempered cord-roughened sherds, apparently from large vessels, a few points and other flints, occasional bone objects, and lenses of charcoal and ashy soil. The cultural stratum, first located in a roadside cut, sloped upward as the excavations continued back from the

face, but the slope was more gradual than that of the present grass-covered ground surface. When work was discontinued, the sherd level was at a depth of 7 feet or more underground. Laterally, to east and west, its distribution is restricted by shallow swales; its ultimate limit southward under the rising valley slope, is undetermined.

Surface remains seen during the surveys carried out from time to time suggest that Upper Republican materials, presumably intermediate in time between the prehistoric Woodland and the protohistoric Dismal River are also present here. No work was done in any sites that can be attributed to this horizon. Local collections seen included many and varied point types, including fragmentary Folsom points. It seems certain that when thoroughgoing studies of this locality are made a long sequence of occupations, probably beginning with early hunter or lithic manifestations, and continuing through a series of later prehistoric and protohistoric pottery and hunting horizons will emerge. Thus, despite their superficially uninviting appearance, the Nebraska Sand Hills promise a rich return for anyone willing to seriously investigate their archeological resources.

NORTH DAKOTA

Organized archeological salvage operations proposed by the University of North Dakota did not materialize on the scale of the preceding season, owing to deficiencies of transportation and pending personnel shifts. Dr. Gordon Hewes of the University's staff devoted several days to investigations in Garrison Reservoir above Sanish. Limited test trenching was done at site 32MN9 on the left bank of the Missouri River, about 1½ miles above Little Knife River. This site was selected for further testing because preliminary reconnaissance in 1947 by a River Basin Surveys field party had disclosed evidence of possible stratification of cultures. Pottery samples were collected at that time from two zones—one in the upper 8 inches, the other from 12–16 inches deep. These indicated at least two wares of rather distinct and different character, each associated with a definite type of projectile point. The markedly different character of the remains from each of these two levels, and the clear separation of the two zones, strongly suggests two occupations. Since the site lay well below the conservation pool level, further investigation seemed called for.

The location of the test trenches opened by Dr. Hewes, in relation to those made previously by the Surveys party, has not been determined. However, the test trenches opened by Dr. Hewes failed to disclose any stratification comparable to that noted in the earlier work, and no pottery was found. Other remains were so limited in amount that additional digging did not appear to be warranted. Sur-

face observations at other sites in the vicinity were equally unrewarding. It would appear that the later investigations by Hewes may have been in another part of the site from that in which the first tests were made, and it is possible that extension of his explorations, which time did not permit, might have yielded different results more in line with those of the earlier observers.

CONCLUSIONS

In appraising the work of the Missouri River Basin Survey in 1949, as compared to that of preceding years, several considerations must be borne in mind. For one thing, there is a great and growing urgency about the scientific recovery program as a result of the rapidly expanding and constantly accelerating water-control program. On the part of the construction agencies, projects already begun are being pushed toward completion, and in some instances impoundment of water is well advanced. Elsewhere, new construction is getting under way at all too frequent intervals. This, of course, was to be expected; and so when the River Basin Surveys program was set up, it was hoped that the recovery operations could expand and go into large-scale excavation more or less simultaneously with expansion of the construction work. Unfortunately, however, funds for field work other than survey have been difficult to get, and the proposed excavation projects for which money has been sought regularly have materialized only in a few exceptional cases. In 1949 the major obstacles to accomplishment on the scale called for were again factors largely beyond our control; namely, the allotment of funds inadequate to set in motion the detailed plans that had been worked out in good time. It is to be hoped that a substantial portion of these plans can be realized in the coming year; but since the program of the construction agencies was not slowed down as drastically by fiscal uncertainties as was that of the River Basin Surveys, the bleak fact remains that one field season was largely lost to the organization specifically charged with responsibility for the scientific recovery work in the Missouri River watershed.

The setback thus imposed was felt in some measure in all portions of the Missouri Basin, but has hit hardest in those sections where destruction of archeological remains, at least, will be most complete and far-reaching—the valley of the Missouri main stem in North and South Dakota. Here the work of the Corps of Engineers at Fort Randall and Garrison Dams is well advanced, and perhaps three or four more seasons at most will see the structures completed to the point where impoundment of water and flooding of archeological sites will take place. A third major project, Oahe Dam near Pierre, S. Dak., is also expected to get under way shortly. In all these, impoundment of

water will result in the complete obliteration of hundreds of village sites, burial grounds, and other features that cannot be duplicated anywhere else in the region or outside it. No one even slightly acquainted with the many and varied remains in this area can view their impending submergence except with grave concern and the hope that a determined effort may yet salvage a worthwhile segment of the materials facing destruction.

Recognizing, then, the factors that operated to prevent a large-scale excavation program on the Upper Missouri and at certain smaller projects in the Montana-Wyoming region, we may still say that the year's activities produced some worthwhile results. The reconnaissance of hitherto unsurveyed proposed reservoir sites in the Dakotas, Wyoming, and Montana disclosed, for one thing, several additional localities that will bear more intensive examination if construction plans become active, and indicated at the same time that certain other localities can probably be written off as unpromising from the standpoint of human and cultural remains. The intensive researches carried on at Angostura by the River Basin Surveys, and those which were conducted at Harlan County, Medicine Creek, and Mullen through the welcome cooperation of State agencies, have added significant data to our understanding of various phases of the pre-White occupancy of those localities. To these and other accomplishments in the field must be added the less obvious and less easily appraised achievements in the laboratory, where progress was made in the preparation of scientific reports and in the organizing and preservation of basic data pertaining to previous and current researches.

With reference to current field work and researches stemming therefrom, the year's activities in the Missouri River watershed by the River Basin Surveys and the cooperating agencies again represented a wide range of interests temporally and spatially. Sites that are demonstrably early and may well have a multimillenial antiquity were investigated by the River Basin Surveys at Angostura and by the University of Nebraska State Museum at Medicine Creek. Materials probably or certainly on a later time level were examined at Angostura, Harlan County, Mullen, and at a number of other proposed and active projects in Kansas, South Dakota, North Dakota, Wyoming, and Montana. Most of the 1949 work in these latter reservoirs, as noted in an earlier section, was of very brief duration and preliminary in character, and so its evaluation must await completion of more intensive investigations than have yet been possible.

Materials evidently bearing on the problem of "early man" in the Missouri Basin came under observation at two widely separate localities. At one, the Long Site (39FA65) in Angostura Reservoir, the artifact yield has been distressingly low, but surface and subsurface

finds, some of the latter in association with buried stoneless hearths, suggest relationships with the Plainview, Tex., finds, and with others in the northern plains that apparently have a respectable antiquity. Unfortunately, there is virtually no bone refuse and so no direct comparisons are possible with the excellent series of extinct bison remains found at the Plainview discovery site. As indicated in a previous section, it would appear that a considerable part of the original Long Site has been destroyed by gullying, but it is still possible that additional information could be obtained by large-scale stripping of the overburden on the stream terrace between the known outcrops of archeological materials.

In Medicine Creek Reservoir, the discovery of projectile points of unquestionable Plainview type in an occupational horizon at site 25FT41, on Lime Creek, is of interest. That the site is as old as has been claimed in press releases and preliminary reports, which give it a "pre-Mankato climax" dating, has not been demonstrated to the general satisfaction of archeologists and geologists. The fact that evidence exists of a statification of cultural deposits, some of which may be older than the level in which the Plainview points were found here, lends added importance to the site.

Very likely generally later in time than the Lime Creek and Long Site remains are the numerous nonceramic sites reported from many parts of the Angostura locality, frequently in association with buried soil surfaces of unknown antiquity. These sites are marked by hearths of various kinds and by thinly scattered stone artifacts; bone refuse is scarce or absent. Under ordinary circumstances, the materials that can be recovered from these stations are usually so limited in quantity and kind as to preclude convincing segregation into meaningful sequential series. Through the limited use of earth-moving machinery as well as hand labor, and the stripping of sizable parts of the old occupation surfaces, it has been possible at Angostura to gather somewhat larger samples of the remains. To what extent these will permit the delineation of distinct cultural horizons will become evident only after detailed laboratory analysis of the data recovered. Meanwhile, we may note that more or less similar sites and materials have been recorded previously by River Basin Surveys personnel at many other reservoir areas throughout the Wyoming-Montana region. It is presumed that they represent the remains of a series of native hunting and gathering peoples who successively, but perhaps not continuously, inhabited the region through a span of time that probably covered several millenia. It is perhaps unnecessary to observe here that not all nonceramic remains in this region are necessarily to be regarded as preceramic or of great antiquity; some of them doubtless represent the traces of seasonal hunting camps of peoples of relatively recent periods

who dwelt at other times in more permanent villages situated elsewhere. There seems to be nothing in the archeological findings to date to contradict the view that the western plains in much of present Wyoming and Montana were occupied throughout most of prehistoric time, as in the historic period, by small bands of roving hunters and gatherers who had no fixed settlements comparable to those of the semihorticultural peoples in the eastern plains.

The investigations at pottery-bearing sites in Angostura, Harlan County, and Mullen Reservoir areas, has contributed useful information concerning some of the later prehistoric and protohistoric peoples who resided in this region within, roughly, the last thousand or fifteen hundred years. Discovery on Horsehead Creek at Angostura of a site (39FA30) yielding heavy, cord-roughened sherds suggests the presence here of an early pottery-making people presumably related to the Woodland culture, or cultures, so widely represented throughout the trans-Missouri plains. Other buried material of evident Woodland affiliation came to light at Mullen. At neither of these locations was it possible to obtain a very extensive series of artifact types or a clear picture of the sort of community and people represented.

On a later time level are the materials disclosed by investigations in an Upper Republican village site at Harlan County and the perhaps related camp-site remains at site 39FA23 at Angostura. In Harlan County, the prospects seem excellent for getting not only a good definition of the local Upper Republican horizon but also for establishing its association with an old buried soil surface which might eventually be datable thereby. Fortunately, the University of Nebraska Laboratory of Anthropology which is carrying on the cooperative archeological work at this locality, is cognizant of these prospects, and we may hope that continued inquiries will throw further light on the interrelated problems of prehistoric archeology here and its inferred climatic setting. At Angostura, it is not yet clear whether the Upper Republicanlike site or sites represent only temporary hunting camps reoccupied briefly from year to year or alternatively are to be regarded as locally specialized manifestations of a prehistoric village-dwelling people who elsewhere subsisted in considerable measure by horticultural pursuits.

The work done in 1949 at Dismal River culture sites in Harlan County Reservoir and at Mullen is significant because it ties in the upper end of an archeological sequence with early historic documented data bearing on Indian-White contacts. There remains little doubt that these sites are assignable to a late seventeenth or early eighteenth century Plains Apache occupancy, and that the White contacts indicated were in the period when Spanish and French interests were im-

portant in the region. The data now at hand ought to contribute materially to a more accurate characterization of the mode of life and the cultural equipment of the early historic Plains Indians, and perhaps also to a clearer perception of the antecedents from which the defined archeological horizon was derived.

It is apparent from the foregoing remarks that the all-too-limited archeological field work conducted in 1949 in the Missouri River Basin has resulted in no startlingly new views or scientific concepts, nor did it disclose any hitherto totally unknown or unsuspected archeological complexes. At the same time, it can truthfully be said that numerous details have been added here and there to help fill in the still sketchy outline of human prehistory which has been gradually taking on more substance as field work goes forward. There can be no question that our knowledge of Missouri Basin prehistory, demonstrably a long and involved story, will continue to advance as additional data are gathered in the field. These data are badly needed from all portions of the Basin, from the sparsely peopled west as well as from the more heavily populated east. With no intention of minimizing the scientific usefulness of what has been done or professional interest in the localities that have been worked intensively to date, it is still timely to record the sad fact that in the section of the Missouri Basin where the largest and richest remains of prehistoric peoples occur in greatest profusion, a large-scale and continuing excavation program still remains a thing of the future—a future, be it noted, that with a few more years of neglect will become archeologically forever a little-known and dimly understood past.

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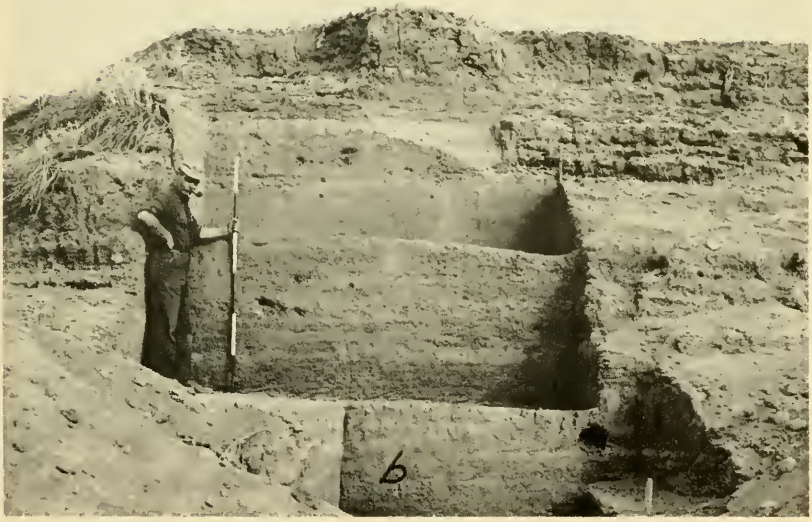
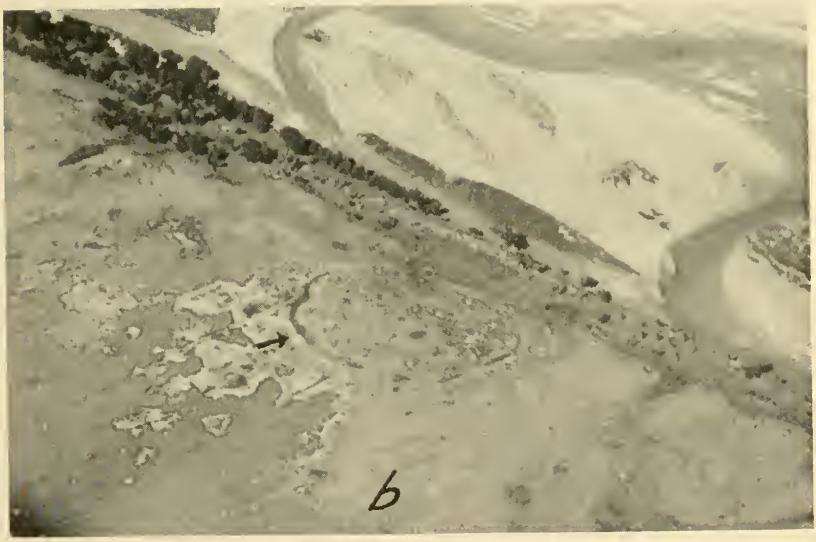


a, Site 39FA10, Trench B, showing archeological remains at various levels; Angostura Dam in background. Fall River County, S. Dak. (Neg. 39FA10–30.) *b*, East test trench at site 39FA30, on Horsehead Creek, Angostura Reservoir, Fall River County, S. Dak. Neg. 39FA30–34.)

a, Site 24PR2 at edge of sandstone cliff (foreground); looking southeast toward Powder River and Bitter Creek. Moorhead Reservoir, Montana-Wyoming. (Neg. 24PR2–2.) *b*, Site 39PE10 (on knoll in foreground), looking west up Moreau River Valley. Bixby Reservoir site, Perkins County, S. Dak. (Neg. 39PE10–2.)



a, Chimney Butte from Manderson-Rockyford Road, with low terrace and site 39SH1 (arrow) in middle distance. Rockyford Reservoir site, Shannon County, S. Dak. (Photo by R. G. Slattery.) *b*, Site 39ST14 (Scotty Phillips Ranch), a fortified Arikara village site in the work area just below Oahe Dam; Stanley County, S. Dak.