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Miscellany

THE UNITED STATES
DEPARTMENT OF THE INTERIOR
· NATIONAL PARK SERVICE ·
REGION ONE ~ RICHMOND, VIRGINIA
In the ordinary course of events, the ocean is the great receiver — the world's greatest collector. It collects the sediments that are eroded from the land by streams, winds, waves and glaciers. As the earth's most populous burial ground, it receives the shells and bodies of countless organisms that swim in it or drift upon its surface. It also, upon occasion, receives the bodies of animals that lived upon the land. During times of widespread upheaval many of these things are restored to the land, but only rarely does the ocean itself become an active agent in a process of giving back to the land the bones of animals that once roamed upon it. It is our purpose here to describe such a case. At Edisto Beach State Park in South Carolina, the bones and teeth of long-extinct animals — animals that lived upon the land in the Ice Age — are being excavated from the ocean floor and washed ashore by storm waves of the modern Atlantic.

There is, of course, no actual migration as in the fanciful sketch which appears on this page, but the event nevertheless has some of the elements of an anachronism. Ancient animals are being washed ashore by the sea which, contrary to its custom, is acting as the giver rather than the receiver. If this situation is not anachronistic it certainly is paradox-
a reversal of a normal process of nature. The cavalcade of animals that comes piecemeal to the shores of Edisto includes beasts that seem strangely un-American. It includes elephants — Woolly Mammoths and Mastodons — Ground Sloths, Giant Beavers, Tapirs, Giant Armadillos, Royal Bison. It includes horses that lived and died here long before the Spaniards brought the first of our present stock in the early 16th century. But these venerable inhabitants of South Carolina are not un-American. It is we who are the newcomers! Associated with the forms mentioned above are others that are more familiar, such as the teeth of bears, antlers of elk and deer, and plates of large land turtles together with the bones of still other animals that lived in the sea. In this last group are the globular ear bones of whales, curved ribs of sea cows that were the ancestors of the rare individuals still living along the coast of southern Florida, plates of alligator and marine turtles, along with teeth of sharks and spines of rays that lived in periods before the Ice Age. During the summer of 1937 Student Technician Hugh M. Rutledge, with the help of volunteers from the CCC camp, collected more than 1,500 vertebrate fossils of which he identified more than 200. The following summer Student Technician Rudolph A. Jaworski added nearly a thousand specimens to the collection. We may well pause and wonder. How did such a motley crew of early Americans find their way into a common graveyard?

Before we can arrive at a satisfactory answer to this question we shall have to learn a little more about the existing situation at Edisto Beach. In picturing the ocean at Edisto as a giver we were being overly generous with that relentless foe of the land. Edisto lies in a broad reentrant in the coast line — an arc, concave landward, that extends 180 miles from Charleston to the Florida boundary. In this arc today at Edisto, the waves are eating into the land at the measured rate of 15 feet a year, and there is clear evidence to indicate that the process has been going on for a long time.

On the present beach at Edisto a bed of green mud outcrops close to low tide level. During his early investigations in the area Mr. Rutledge discovered bones in this layer of mud. Believing the bones to be fossil he carefully excavated them, pleased with the prospect of obtaining a complete skeleton. To his dismay the skeleton proved to be that of a very modern cow! Since the cow could not have become buried in the mud at the present site of outcrop, this strange occurrence indicates that what is now the beach was once marsh land and that the sea has moved inland a considerable distance within historic times. The ocean exacts a stiff price for our collection of old bones!

A glance at a Hydrographic Chart gives us additional information of interest. The sea off Edisto is very shallow, the "continental shelf" being about 70 miles wide. All the sea bottom within five miles of shore is less than 40 feet deep. If sea level were to be lowered 150 feet the shore would be extended 55 miles! This point is significant and will be referred to later. From actual observations we know little about the materials that form the sea floor but we do know that the flat strip of country forming the present coast is underlain by marine deposits of the Ice Age. From this strip — known as the Pamlico Terrace — marine
shells have been collected to levels 12 feet above low tide. This assem­
blage includes a large number of species that live today only in war­
mer latitudes. We shall show later that this fact is not extraordinary,
for the shells lived during an in­
ter-glacial epoch when the sea stood higher and the climate was warmer.

We do not know the exact thick­
ness of the Ice Age deposits at Ed­
isto Beach but the fossiliferous portion is probably only a few feet
thick and probably lies close to sea
level. At Coffin Point 10 miles to
the southwest, where the Service's
core drill put down an exploratory
well, we entered sediments at a
depth of 72 feet that appeared to be
definitely older than the Ice Age.
This gives us at least a maximig
ure for this general area and one
that compares favorably with other
drilling records. The deposits of
the Ice Age consist of beds of dark mud with some sand and shell. The
vertebrate fossils are impregnated with mineral matter and their outer
surfaces are stained nearly black by organic material. Some of the larger
ones come ashore encrusted with sand and recent marine shells, indicating
that they have lain exposed on the sea bottom for some time before being
cast upon the beach.

Before continuing our description of the process of excavation let us
consider the conditions that existed in the world during the Ice Age. In
that period tremendous quantities of water were taken out of the oceans
and locked up on the land in the form of glacial ice. About one-sixth of
all the lands now in existence were blanketed with ice. About one-half
of North America was covered. The ice extended from Alaska to Greenland
and southward to the Ohio and Missouri Rivers. South Carolina was not
 glaciated but it felt the effects in a somewhat cooler climate and in the
fact that the sea was lowered at least 150 feet, possibly much more. This
latter, as previously mentioned, greatly extended the land area to the
southeast. From what is now the coast of South Carolina a broad flat ex­tended seaward for more than 50 miles. This area lay close to sea level
and parts of it doubtless were swampy traps for unwary animals, as are
parts of the Coastal Plain today.

We should mention at this point there was not just one epoch of
 glaciation --- there were four. These cold epochs were separated by warm­
er inter-glacial epochs. During these times the ice melted, the glaciers
retreated northward and sea level came back to normal. In South Carolina
during each warm epoch the sea rose to cover the shelf that had been ex­

(1) H. G. Richards, "Fauna of the Pleistocene Pamlico Formation of the Southern Atlantic Coastal
posed during the preceding glacial stage. Sea animals flourished and shell beds were formed. As the glaciers re-advanced the sea retreated and the land animals that lived along the margin of the glaciers retreated southward ahead of the invading ice. They inhabited parts of the newly exposed land and left their bones to mingle with those of sea animals. These changes took place slowly, of course, and it is estimated that the entire Ice Age (not counting the present epoch, which may be just another inter-glacial stage) occupied a span of 2,000,000 years.

The fact that the Edisto deposits that now are being excavated contain the remains of bison and bears — animals that apparently did not migrate into America until the closing stages of the Ice Age — suggests that our deposit is fairly young. It is difficult to determine the exact age because the fauna that is being washed up is considerably mixed. The waves may have access to two or more thin deposits of different ages. Some of the sharks' teeth belong to species that antedate the Ice Age but these teeth are resistant objects that may have been reworked — mixed up with Ice Age deposits during the Ice Age. Likewise, it is known that some of the typical Ice Age mammals that are now extinct — American horses, the Giant Sloth, Mastodon, and Woolly Mammoth — persisted in North America until a few thousand years ago. These particular animals were still in existence following the retreat of the last glacier and some, at least, after the arrival of the earliest human beings on this continent. You may ask, is it, then, not possible that the Edisto waves may uncover human artifacts or actual skeletal remains? It is possible but very unlikely.

We shall not attempt in this brief account to describe the appearance or the habits of all of South Carolina's numerous extinct animals but Mr. Kiener has sketched some of the commoner ones, basing his sketches on well known restorations. Only bones and teeth and plates are found at Edisto and Irving Gladstein has kindly photographed a number of these. Of particular interest are the tiny milk teeth of the elephants[2] — one from the browsing mastodon, the other from the mammoth, a grazing animal. Bones of the former have been found associated with human artifacts in Florida; frozen bodies of the latter have been recovered in arctic regions. The Giant Sloth that lived in the Edisto region bore little resemblance to his modern tree-dwelling relative. The Ice Age sloth was a ground-dweller that stood erect to pull down branches with its claws. It probably lumbered awkwardly on all-fours, walking on the outer edges of its feet. Some of the horses were as large as those living today.

Many believe that the fossils that are being washed up at Edisto are brought to the coast by streams, but to the writer it seems unlikely that such is the case. Nearby streams, such as South Edisto River, are sluggish and carry only fine sediment. It seems doubtful that they could bring down large heavy bones even if aided by tidal currents. Mr. Rutledge, who probably knows the area better than anyone, reported that the largest bone that he found weighed close to 40 pounds. The writer weighed the largest one now in the Edisto Museum — a fragment of elephant bone — and found that it weighed 20½ pounds. Mr. Jaworski, who collec-

[2] My identification of these teeth has been verified by Dr. C. L. Gazin of the United States National Museum.
ted 967 specimens, reported that they were most abundant at high tide mark on the Edisto front beach and in the area immediately to the northeast. Fossils were comparatively rare on Bay Point and on the beach fronting South Edisto River. Mr. Jaworski also pointed out that bone fragments less than 2/3 inches long were rare. In the writer's opinion, the waves at Edisto are eating into an unusually rich concentration of vertebrate remains buried just below sea level. In this connection it is interesting to note that the nearby Hunting Island beach, which, like Edisto, is receding rapidly landward, has not yielded a single fossil although it has been searched carefully.
DEPARTMENTAL LETTER OUTLINES POLICIES ON PREDATORY ANIMALS

Policies governing the program of the National Park Service concerning predation are restated clearly by Secretary Ickes in a letter replying to an inquiry from California. It says, in part:

The total area of all the national parks, monuments and other reservations in the national park system is less than .8 per cent of the total area of the United States, its territories and possessions. . . . The national parks and monuments are set apart to preserve nature intact and unimpaired on this relatively insignificant fraction of our national land area. These reservations have been selected because they are outstanding examples of the native character of our country. As long as they are under my jurisdiction I want to keep them whole, without exploiting any of their natural resources for commercial advantage. The remaining 99.2 per cent of the nation's land is available for other uses. Predatory animal control is practiced widely on the 400,000,000 acres of public lands and on private lands where desired.

I see no inconsistency in devoting a small fraction of our lands to national parks and in protecting them from the commercial uses and practices of the remainder. I see no inconsistency in protecting all native wildlife in one area, for people to enjoy, and in controlling wildlife on another area that is devoted to the raising of domestic livestock. Our country is not so poor that it cannot afford to save some of its natural heritage unspoiled.

This Department, moreover, has maintained a reasonable wildlife policy in its administration of the national park system. Control measures are authorized when the facts of the case clearly demonstrate that such control is necessary. On the other hand, no control is practiced without proof of such necessity. I believe this is a fair policy . . .

TRAVEL RECORD BROKEN IN GREAT SMOKIES

A new high record for travel to Great Smoky Mountains National Park was set in August when a total of 169,998 persons visited the North Carolina-Tennessee area. Two out of every three visitors were from states other than Tennessee and North Carolina, and Ohio, with 24,251, led even North Carolina in the visitation lists. The total for the first 11 months of the travel year (October 1-September 30) reached 663,134. The total for the entire travel year of 1938 was 694,634.

A total of 174,568 visitors was reported during August at Shenandoah National Park, Virginia, which has been leading all units of the national park system in annual travel. The total for the year reached 753,781, a slight decrease under the figures for 1938.

Approximately 100,000 visitors were recorded during the month at Statue of Liberty National Monument.
In the popular imagination the archeologist is a mysterious fellow who delves in the ground and periodically emerges with exciting news of some striking discovery—a rare object, human bones of strange people long since buried, remains of ancient towns and villages, or other material evidence of the existence of man in past ages. He is a sort of glorified ditch digger who, spade in hand, pushes back the boundaries of our knowledge of human life before the dawn of history or adds concrete information to support the written record of the historic past.

In reality the archeologist is a scientist whose work requires the use of many and varied techniques. When he drops his spade and trowel and climbs out of his excavation his work is but half done. Armed with voluminous field maps, sketches and notes, he moves his excavated materials indoors. There, in his specially equipped laboratory, he painstakingly analyzes his finds and compares them with discoveries made at other sites. Then he prepares the detailed reports which announce to other archeologists and to the world at large the real nature and significance of his findings.

The Ocmulgee laboratory was established for the purpose of cataloguing and studying the large collections of pottery and other objects excavated since 1933 at Ocmulgee National Monument, Macon, Georgia, and a
number of nearby sites.\(^1\) This extensive excavation program resulted in about 30,000 storage boxes of potsherds (fragments of Indian vessels), flint tools, bone and shell ornaments, and numerous other objects of Indian manufacture.

The laboratory was established early in 1938. It took over the staff of the earlier field laboratory which had been operating during excavation. Temporary quarters for storage and office space were obtained in the Macon Municipal Auditorium. The staff consisted of 35 clerical workers supplied by WPA, ERA, and CCC, under the direction of two supervisors.

The first problem was to catalog adequately all the material and to index the voluminous field notes and observations written by the excavation staff. During excavation the archeologist separates the material into groups according to the evidence revealed in digging. Thus a single field number may be assigned to a single object or to a collection of similar objects from the same location, soil level, house floor, burial, etc. In the case of whole pottery vessels, stone tools and the like, each object is given a separate number. Small potsherds, broken tools, scraps of animal bone, and similar objects are lumped together so that all of the materials from one place may be handled at the same time. This segregation depends upon the judgment and knowledge of the archeologist. Notes are taken for each separate piece on the surroundings, soil condition, associated objects, depth or other items of significance. The notes, together with a running account of the excavation, are returned to the laboratory where they are typed, indexed, and preserved for future reference.

The purpose of cataloguing is to make each collection readily available for analysis together with the notes describing its discovery. In the laboratory a number is first assigned to each object or collection. This consists of a serial number and an abbreviation identifying the site by county. This is written on the object in India ink, or in the case of

beads and other small objects, on a tag attached to the object. The number also appears in the upper left corner of the catalog card as shown on the opposite page. The catalog card also contains (at the left side) references to various notes, profiles, maps or photographs of the material. On the right side of the card are recorded the site name, field number, horizontal location, depth and associations together with a description of the material. The location in the storage spaces is given at the bottom. The cards are typed in triplicate and filed by master catalog number, site (geographical unit), and by material (bone, stone, shell, or pottery). When the catalog cards are completed and filed it is possible to learn all the information available by consulting the file under any one of the three headings.

A total of 1,139,024 objects has been catalogued in this manner. These fall into 35,278 collections representing either single objects or boxes of sherds, flint or bone fragments. This large number of objects is temporarily stored in approximately 10,000 boxes, 10 exhibit tables and 35 feet of shelves for whole vessels. The great majority of this mass of material came from the Macon Plateau and the Lamar tract, the two areas of Ocmulgee National Monument.

The second phase of work in the laboratory is the preservation and restoration of excavated material. All human bones from burials, as well as bone tools, such as awls, punches and needles, are strengthened by saturation with a solution of synthetic resin in acetone. Shell beads and ornaments must be carefully cleaned before strengthening with the same solution. Wood and charcoal specimens are preserved by soaking in mixture of paraffin and gasoline which makes them more easily handled by the dendro-chronologist. These wood specimens are vitally important because it is hoped that exact dates for the various occupations can be determined from a study of the climatic changes as recorded by the growth
rings. Copper ornaments from the historic Creek occupation are cleaned with chemicals to prevent further corrosion and reveal something of the original appearance. These copper bells, buckles, bracelets and other ornaments when cleaned of the green patina reveal an attractive yellow color that readily explains why copper was such a favorite article of trade among the Indians. Many glass beads from the Creek village and shell beads from the earlier settlements must be strung --- a considerable task when it is considered that more than 26,000 minute shell beads were found with a single burial. Finally the pottery vessels which have been crushed by burial in the earth or were broken by the Indians must be restored to their original form. The first step is to fit and finally glue together all the pieces recovered. In many cases it is then simply a matter of filling in with plaster-of-Paris a few small missing fragments. Often, however, only a third or a half of the vessel was found. In this situation it is necessary to construct a mold of clay by the use of the pottery wheel to support the sherds while the lost section is replaced. This is done only in cases where similar vessels are at hand, in sufficiently intact condition to indicate clearly the shape of the missing parts. The reconstruction of badly broken vessels from as many as 200 pieces is often an extremely delicate task, compared to which the most difficult jigsaw puzzle is a mere childish game. In six months 73 pottery vessels ranging from a small cup 2 inches high to a large basin 2 feet 4 inches in diameter, have been restored and are ready for study and display in the museum. The work of the restoration unit provides material for museum exhibits and enables the archeologist to get a better picture of the objects as the Indians actually used them.

The third function of the laboratory is to analyze the materials with a view toward making technical reports. Analysis depends upon the habit of human beings to make things in "styles". Thus the various Indian settlements on the Ocmulgee had different styles of pottery, tools and ornaments. Within a single group these styles changed with time of the influence of other groups. The archeologist calls these styles "types" and by careful study identifies the various types, their changes and relationships to other types. In practice the objects are laid out on tables and sorted, the number and exact description of each type then being entered on the catalog cards. When this material has been summarized, statistical methods are employed in the final stages. Graphs and drawings are prepared showing changes within styles or the replacement of one type or another. Thus the archeologist builds up a connected story of the life of the people and interprets it in terms that the layman will understand. Out of this analysis comes not only technical reports but also the information required for museum and outdoor exhibits. The story told by the monument is made clear only after this analysis is complete.

Finally the laboratory furnishes information to other research centers on questions of technical nature. Early in the course of developing the monument area it was found that a number of other national areas in the Southeast often encountered archeological materials and it was decided that the facilities and trained staff at Ocmulgee should serve as consultants concerning them. A number of areas already have transmitted
collections of Indian pottery and artifacts and Ocmulgee has become the archeological repository for the Southeastern monuments. Where possible, reports on these collections were prepared outlining the problems so that the various monuments could undertake adequate protection of the sites involved. Ocmulgee continues to receive such collections and, as the body of material increases, the staff will be able to give more information about the archeology of other monuments.

The laboratory is thus a workshop where the archeologist not only mends broken vessels; it is a place where he also pieces together the fragments of the puzzling story uncovered in the mounds and burials of a vanished people. This is the true task of archeology: to make the story of the past alive and give it a meaning in terms of modern life.

BEADS RESTRINGED BY LABORATORY WORKERS AT OCMULGEE

LIST OF PUBLICATIONS ON OCMULGEE NATIONAL MONUMENT

Jennings, J. D.,

Kelly, A. R.,
BASHFUL AUTHORS

The Review learns that its previous notices concerning voluntary submission of articles have not been received with 100 per cent conviction. It appears that many capable writers still await a personal invitation before offering materials which well might add to the sum of Service information. As pointed out before, The Review welcomes volunteers. It does not wish to restrict to a list of formal requests the great wealth of subjects about which members of the field staff probably possess unpublished information. It can make specific requests only of those employees whose duties are known to include researches, discoveries and activities of general interest. Yet many other workers --- some often described carelessly as "obscure" --- also enjoy unusual opportunities for assembling worthy observations.

In recognition of these facts, The Review again emphasizes its willingness to examine unsolicited materials. Some already received have been excellent, and it appears that others just as good are illuminating the interior of the bushel of modesty.

OBJECT LESSON

"In what language do they telegph the news?" asks The New York Herald Tribune (August 13) in an editorial which points with gratification to the flourishing wildlife of Bear Mountain Park where "only a generation back the sight of a wild animal would have aroused in most watchers regret that they had no means of killing it. . . ."

"How does it get about that suddenly a dangerous wood has become safe for deer, that people of this place like screech owls, that here the fox need fear no hound? . . . Will a day come when great regions of the world will be like this woodland and men will feel the change with no announcement, telling their kind by their own conduct as these animals and birds have done, that in a certain place there is inexplicable but proved tolerance and well-being? . . . Almost it seems credible, when a mixed million of humans a year can pass through a wilderness and harm nothing."

SLEEP EMBARGO REPEALED

September 11 dawned bright and clear. No cloud by its semidiaphanity bedimmed the cordial rays of a friendly sun which, with the roseate fingers of morning, plucked gently away the last crepuscular shadows of the sombre mantle that the earth, after refreshing slumber, now prepared to lay gratefully aside. In fact, it was an all-round fine day.

By telephone and back fence, housewives spread the joyous news. The men, scurrying to bustling marts, paused at street corners and voiced their opinions with looks of inward satisfaction. A great mass meeting was called and there were patriotic speeches, pledges of fidelity and spontaneous paeans of praise. Congress was memorialized and messages of good will were sent to the democracies. Peace reigned and the lion and the lamb sat down together over a mess of cracked ice. The unfaltering forces of civilization had extirpated the last hideous vestiges of barbarism. The Golden Age of Sleep had dawned.

After its lapse into the unmanly customs of summer, the Service, ever humane at heart, had resumed its to-work-at-9 o'clock-in-the-morning schedule. --- H. R. A.
TEN SCHOOL MEN FOR A SIXTY-MILE RAILROAD

The Capture of the Petersburg and Weldon Line in 1864

By Raleigh C. Taylor,
Junior Research Technician,
Petersburg National Military Park

Little boys are told, doubtless with good reason, that they should not put pennies on the tracks since possibly the locomotive would be derailed. One way and another, however, it always costs more than a penny to stop a train, just as it costs a great many pennies and sometimes a few lives to start one, if we count the construction of the road.

The Petersburg and Weldon Railroad, one of the earlier Virginia lines, was relatively inexpensive in construction. Certainly its 60 miles of right-of-way crossed neither mountain nor desert, and it appears that the story of its building has left no deep impress on American history. Not so for its destruction, for the stoppage of that one line had significant military consequences during a period which equals the time in which Napoleon moved from exile to empire and back -- a hundred days.

It was in the summer of 1864, when the nation still awaited the outcome of Grant's struggle with Lee, begun in May on the Rapidan River but now shifted, after many battles and unprecedented losses, 70 miles southward to Petersburg. The Confederates, holding Petersburg and Richmond, had to draw supplies from farther south. If Grant could cut the railroads in that direction, Lee would be compelled to leave his entrenched line around the two cities.

The Petersburg and Weldon thus had become increasingly important in the campaign. As early as May 7, while Grant was still in the Wilderness, Federal cavalry from Butler's army had interrupted traffic. Again in late June raiders crossed it once more, and this time the infantry reached the rails. The effort cost them 2,000 prisoners and gave to General William Mahone his first victory in the defense of Petersburg. Nevertheless, the blue-coats remained on the road or in easy reach of it for some days. With Early rapping at the gates of Washington, however, there was urgent call for troops and the road was abandoned once more to the Confederates.

In July and August the wheezy locomotives still were rolling between Weldon and Petersburg. In mid-August, General Gouverneur K. Warren, a small man in a large black hat, with a heavy sword and a long bird nose, the engineer officer who had seen and defended the key position at Gettysburg, was given his greatest assignment. With a semi-detached left wing finally consisting of 20,000 infantry, he moved out to take possession of the railroad. His column advanced swiftly, bothered more by dust and sunstroke than by the shots from Confederate pickets. A storm came in early afternoon and with it one of the divisions moving
PORTION OF THE RAIL SYSTEM OF THE CONFEDERACY 1864

WELDON RAILROAD

SCALE OF MILES

RICHMOND

LYNCHBURG

PETERSBURG

HICKSFORD (EMPORIA)

WELDON

RALEIGH

GOLDSBOROUGH

WILMINGTON

Hancock, the corps commander of whom Grant said that he never committed in battle a blunder for which he was responsible. Yet Hancock's troops, two miles south of Warren's line, were struck and surrounded by A. P. Hill and Hampton's cavalry. Hill, sick, directed the attack from a blanket on the field. The Federals were broken and lost nine cannon. August 25 was a black day for Hancock who expressed the hope that he might never leave that field. He and Miles (later to command the army) and Gregg of the cavalry saved what they could from the wreckage.

The tale of the Weldon was not over quite yet. In December General Warren was sent out again, on a miserable march through rain and sleet, to complete the destruction southward. He reached Emporia, burning the northward was attacked by the Confederates in the thick woods. The battle had no particular result except to show that the road was not to be taken without trouble.

Next day, in continued rains that made the wagon roads impassable, the Confederates, having realized the seriousness of Warren's expedition, gathered all available strength to thrust it back. The red-bearded A. P. Hill, who was to die when Petersburg fell, did his best to postpone the day. His wiry, high-voiced "toy soldier" General Mahone pushed his division down through the woods to the west of Warren and, although the artillery pounded them back from the open ground beyond, they brought in a heavy "bag" of prisoners, just as they had done two months before near the same spot.

Two days later the Confederates with a still stronger force tried once more, this time from the west, but the chief result was the 350 dead and wounded left in Federal hands. With that failure Lee decided that the game no longer was worth it, or at least that there was no use pushing his thinning regiments against well established lines.

The Federals began a thorough destruction of the rail line, extending the work southward as more troops arrived, this time under Hancock, the corps commander of whom Grant said that he never committed in battle a blunder for which he was responsible. Yet Hancock's troops, two miles south of Warren's line, were struck and surrounded by A. P. Hill and Hampton's cavalry. Hill, sick, directed the attack from a blanket on the field. The Federals were broken and lost nine cannon. August 25 was a black day for Hancock who expressed the hope that he might never leave that field. He and Miles (later to command the army) and Gregg of the cavalry saved what they could from the wreckage.

The tale of the Weldon was not over quite yet. In December General Warren was sent out again, on a miserable march through rain and sleet, to complete the destruction southward. He reached Emporia, burning the
ties and heating and bending the rails from the Nottoway to the Meherrin. The main event, besides the weather, was the finding of considerable quantities of applejack in almost every house, a circumstance which caused delay and straggling and the rise of a rumor that the country people had killed some of the soldiers. The consequences was the unauthorized burning of many houses on the return march.

Thus, before the end of 1864, the Petersburg and Weldon Railroad was disposed of entirely as a military factor. Forty miles of it was a complete wreck. Leaving out labor and property loss, the work had cost the Federal army 9,500 men in killed, wounded and missing --- more than 200 for every mile of wrecked track. Confederate losses are estimated at 2,339. It is doubtful whether any other railroad in the world has been more thoroughly baptized in blood.
The Original First Floor Openings have all been replaced but at an early date. Undoubtedly Heavy Wood Shutters were on the outside & Casement Doors on the inside with the exception of the Door to the Stair Hall on the 2nd Floor. The Iron sash are protected with Round Iron Bars.

The Second Floor has a Wrought Iron Balcony. There are Cast Iron Window Lintels on the 2nd & 3rd floors. The Original Shutters & Casements are still in place (2nd Floor)

The Cornice is Molded with Carved Swags & Haed Mould.

The Roof is Pink Grey Slate with Spanish Tile Hips & Ridges.

The Slave Quarters have Wood Columnettes, Balcony & Rail.
PRESERVING OUR ARCHITECTURAL HERITAGE

Historic American Buildings Survey Compiles Record of Cultural Monuments

By Orin M. Bullock, Jr.,
Regional Architect,
Richmond, Virginia.

The uncoordinated and scattered but passionate interest of individuals and organizations in historical characters and events of the early days of American colonization and development has resulted in the marking, preservation or even the restoration of many fine old buildings through the country, and has stimulated a widespread public interest in the political and architectural history of the United States. In answer to a growing demand, studies have been made and published concerning various of the more obvious and outstanding architectural monuments.

It is fortunate that an interest in our architectural heritage has been so generally aroused while examples of the architectural development of every culture group in the country still remain to be studied. The inexorable tide of destruction destined to wipe out the great majority of the buildings which knew the beginning and first flourishing of the nation cannot be stemmed; fire, the natural elements and the American's insatiable desire to modernize and improve have been taking their toll of our antique buildings at an alarming rate.

The work of private individuals and organizations has been limited by lack of funds and circumscribed by the natural tendency to appreciate the importance of only those structures which are associated directly with great names or antiquity. Emphasis has been placed on the preservation of individual monuments because the scope of such enterprises could not embrace a national field or inquire into more than a local culture.

The opportunity to preserve or record examples of all types of buildings of architectural importance is logically a function of the federal government. That, and the necessity of providing employment for technical men during the years of depression, together with the public interest in antiquity, have resulted happily in the Historic American Buildings Survey. The Branch of Plans and Design of the National Park Service, charged with the responsibility of designing buildings for the operation of areas dedicated to conservation of the natural beauties of the country, recognized an analogy between the conservation of nature and the preservation of our early architecture. It initiated and has been designated to administer the work of the Survey.

The Survey is making the only detailed compilation of the native architecture of the United States ever attempted. It is an undertaking so broad in scope that only an agency of the federal government could hope to record even representative examples of our varied architectural culture. Work was inaugurated in the latter part of 1935 and has been
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prosecuted with funds provided by the Civil Works Administration, the Emergency Relief Administration, the Public Works Administration, the Works Progress Administration, and through the active cooperation of the Library of Congress, the American Institute of Architects, universities and the schools of architecture, and many private architects.

Although far from complete, the Survey has filed with the Library of Congress measured drawings and photographs of thousands of buildings designed and erected before the period of "eclecticism" in the United States. (See The Regional Review, Vol. I, No. 6, p. 28, for a notice of the publication of a catalog of drawings and photographs on file January 1, 1938). The student already may inquire into the local architectural characteristics of many sections of the country and trace the progression of culture and cultural influences which have directed the course of American architecture. The practicing architect thus has reference material for accurate restoration or reconstruction of early buildings in readily accessible form; and the detailed plans of many buildings burned or otherwise destroyed have been recorded permanently. This nationwide work of measuring, photographing and recording will be continued during the current fiscal year, with funds provided by the Public Works Administration, under the direct supervision of the Branch of Plans and Design of the Service, with the cooperation of private architects and the American Institute of Architects.

The buildings selected for recording were erected before 1860 (except for certain western examples), a date chosen somewhat arbitrarily—but a most pertinent one in the history of architecture in the United States—because after that time the sectional characteristics of the country became less and less distinct. Steadily increasing movements of population and accelerated distribution of information broadened architectural taste, and local differences in design and construction methods disappeared. There is little sectional difference in our architecture of today.

As a further result of the widespread interest in our political and
architectural history, the federal government has obtained many buildings closely identified with important periods in the development of our country which have been designated as national historic sites or as national monuments. Outstanding among them in Region One are those at Salem Maritime National Historic Site, in Massachusetts, which is being developed to portray the Golden Age of the clipper ship commerce of the United States. Wharfs, the old customs house, other structures, and gardens are being restored. Another is Hopewell Village National Historic Site, in Pennsylvania, where the story of the beginnings of the iron industry will be told through exhibits in the old buildings still standing in the area. There also is Colonial National Historical Park, Virginia, which preserves examples of 18th century architecture and culture in addition to explaining the military history of Revolutionary days. Still another among many examples is ancient Fort Marion, at St. Augustine, Florida, where the military architecture of early America is on exhibit.

The principle of con...

At the top is the Moore House, a restoration, and in the middle is the Swan Tavern, a reconstruction. Both buildings are in Colonial National Historical Park. At the bottom is the modern Colonial structure erected as an administration and museum building at Fredericksburg and Spotsylvania National Military Park.
servation is interpreted, by the designers of new park structures proposed for areas of little historical importance, to indicate the desirability of creating in new buildings some of the architectural atmosphere typical of the vicinity. An attempt is made to achieve designs which have their roots in local tradition without a sacrifice of modern functional characteristics.

Administration buildings, bathhouses, museums and lodges are types which were unknown before the development of parks began, yet they still may seem "to belong" in the family of cabins, mansions or commercial buildings found near the area and thus exhibit local cultural influences. For those park areas having no particular native architectural characteristics, or those of a purely scientific purpose --- such as Cape Hatteras, in North Carolina, which is set aside to preserve a national seashore, and Ocmulgee National Monument, which is primarily an archeological center, or the Statue of Liberty National Monument, which provides a setting for the sentimentally important statue --- the designers feel free to suggest frankly functional buildings in the "modern" manner. In those buildings (like the administration-museum structure of Ocmulgee National Monument, shown below), the requirements of the program and the availability and adaptability of material and labor are the guiding factors. The resulting buildings therefore reflect the taste of the twentieth century and an interpretation of the scientific point of view.

This work of architectural conservation by an agency of the federal government is a significant example of the functioning of democracy, for the interest and enthusiasm of the people have resulted in a study, recording and preservation of a natural heritage for the cultural benefit of all.
RALPH WALDO EMERSON AT MAMMOTH CAVE

Essayist Describes 1850 Visit to "Great Hole in the Ground"

The petty tribulations and the compensating pleasures of travel to Mammoth Cave 89 years ago, the Asiatic trousers of women explorers, the talents of a subterranean chorus formed by companion visitors, the inroads made on Louisville fireworks stores, and the personal impressions gained from two trips into the famous Kentucky caverns which now are protected as a national park—all are described in the newly published Letters of Ralph Waldo Emerson,1 a collection of his correspondence with relatives, friends and business acquaintances.

It was in Cincinnati, where the New England essayist had several engagements on a lecture tour, that he first disclosed his intention to visit the underground wonders. "I hear so much of Mammoth Cave, in Kentucky," he wrote on May 28, 1850, to his wife Lidian, "that if I should fall in with a party who are going there, I shall easily be tempted. It is 80 miles from Louisville, which I pass in my route." A letter to his brother William, written the next day, indicates he still was receptive to temptation: "... I am thinking a little of stopping at Louisville, next week, & traversing Kentucky 80 miles, to see the Mammoth Cave; thence by Nashville perhaps, to St. Louis & up the Mississippi [sic] to Galena; to Chicago; possibly to Mackinaw; & home by the St. Lawrence."

Finally, on June 4, a postscript of a letter to William Emerson announced: "I part today for Louisville & Mammoth Cave & up the Mississippi2 to Galena & so home." He had "fallen in" with a party of 17 persons, some of them described as "Cincinnati literati," and had taken passage for Louisville on the mail boat Ben Franklin.

It was not until 12 days later, however, after Emerson had reached St. Louis and was installed in the Planters' Hotel, that he wrote to his wife, on Sunday, June 16, the particulars of his visit to the caves. Following a long description of his experiences on the trip to the Missouri city, he continued:

"... But I have told you nothing of the Cave, which it cost me a week to visit. And Ellen3, at least, must be duly informed of the great hole in the ground in Kentucky. At Cincinnati, people who had seen it represented it as so wonderful, and at the same time so accessible, (for they think it a little matter to run down the river to Louisville 133 miles --- (you go on board the boat at noon & arrive about midnight at L.) then you have 90 miles to go by stage which can be done in a summers day, that I suffered myself to be persuaded, & we suddenly made up a party of seventeen gentlemen & ladies, including three Englishmen, & set forth. But when we reached Louisville, there was no carriage beyond.

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2 Emerson was consistently parsimonious in his use of the letter "s" in Mississippi.
3 A daughter.
The mail-coach departed, it is true, at 4 o'clock in the morning, but it had but 3 vacant seats. Extras were none, & could not be for a party of seventeen; neither horses or carriages could be found for so many. If we waited two days, the mail coach would go again, & would carry nine, & no more. Then we betook ourselves of the Green River & so, though the way was long, namely, 182 miles down the Ohio to Evansville, and 150 up the Green River from Evansville & by Barren River to Bowling Green, yet the captain of the "Mammoth Cave" steamer promised so well, that we took passage. We sailed on Wednesday afternoon /June 5/, and did not reach Bowling Green & disembark until Saturday morning at 9 o'clock, & the cave, by coaches, 30 miles, at night. The Green River is narrow & deep . . . but I cannot make my long story longer . . .

"... Early on Sunday morning /June 9/, our ladies appeared in short dresses and Turkish pantalette & turban indespensable to the adventure. We entered the grand old cavern at 7½ o'clock, a chilly descent into the earth. Every man and woman is provided with a good lamp. We had also bought at Louisville the last bundle of Roman Candles in the city, & Stephen the guide carries Bengal-lights. Two and two, every lady with a gentleman, we marched along the grim subterranean street, stooping at first a little, but the stone ceiling soon rose above our heads to 20, and sometimes to 40 or 50 feet. Water is the engineer who built this tunnel, & of course his work is done evenly and well. Every passage may be trusted to lead quite through to some other; & the floor & the ceiling are finished, & usually smooth. For miles, I think, the ceiling presents the appearance of a whitewashed wall, though dingy & weatherstained, & hundreds & thousands of people have held up their lamps & torches & smoked their names on a surface so inviting to the love of fame. The passage for great lengths will be as regularly arched as a railway tunnel, of which it often reminds me. But the little procession moves along, two & two, every one with his lamp, & the ground changes. Now we come off the rocky floor to damp earth, then to water, & a bridge, over what is called the "Bottomless pit." We lighted a newspaper & let it sink flapping & flaming down till it touched bottom, & was extinguished. We came to the Church and its pulpit rock, an area where some thousands might sit: to the "Coffin Room" where the vault widens & heightens, & in the middle of it lies uplifted on its table a sarcophagus 54 or 58 feet long, --- fit, I think, to be the tomb of Columbus in the heart of his continent. We came to a little river which we crossed, 8 at a time in a boat, & pretty soon again to another river, Echo River, which was to be crossed again in boat six at a time. Here, as each party disappeared under the winding vaults which arched the river, our ladies, three of whom were excellent singers and two gentlemen sung /sig/ well---made a music quite preternaturally good, ---so it seemed to me as I hearkened on the Acherontian shore to the disappearing choir of souls. Some of us, I for one, did not make this navigation this time, nor until our return from the extremity of the cave, but clambered & crept through a difficult alley of rock called "Fat man's misery," through "Purgatories," & to the "Valley of Relief," where we rejoined

(4) Pyrotechnic blue light composed usually of a mixture of saltpeter, sulphur and sulphide of antimony.
our sailors. But I cannot recount all the details of our pilgrimage. Sometimes we came to Rocky Mountains where we needed to climb up & down over mere heaps of broken rock; sometimes down slippery sideling narrow paths with a chasm below us on one side; sometimes to ascend by ladders rather dangerous-looking to nervous ladies. From the mouth of the cave to Serena's Arbour, which was our farthest point, is nine miles, and we returned all the way on our own steps, an 18 miles' walk performed in 14 hours...

"... Another fine chamber is called the "Vineyard," because the whole wall is a mass of stony grapes. Another the "Snowball Room." All the roof is snowballs. When we came to great enlargements we lit a Roman Candle & discharged its dazzling fireballs into some yawning vault. No height or depth could resist their prying eyes. It was a long & trying tramp certainly for ladies to make, but the temperature of the cave which is invariably 57 or 58°, winter & summer, permits great & long-continued exercise, and no accident, not a fall or a sprain occurred. When we emerged into the warm light at half past nine o'clock, it was raining fast, and a long & violent thunderstorm had passed over us whereof we nothing knew. We had lost one of the "days of our bright lives." People say, the best part of the cave is the outside, and the emerging into daylight is magically fine, as I found the next day, on my second visit. There is a point where you feel the chill of the cave on one cheek, & the warmth of daylight on the other. The next morning we entered again, & made a visit of four hours to new parts of the cavern -- to the "Gothic Chapel," to the "Star Chamber," and to Gorin's Dome." The Star Chamber is a broad passage where the lofty ceiling perhaps 50 or 60 feet overhead is a black ground dented with here & there a white spot. The guide takes away all your lamps & hides them and you find yourself at once under a starry sky, with a comet, too, easily distinguishable. The illusion is perfect. I lay here on my back on the ground for a quarter of an hour or more whilst our choir sung "The stars are in the quiet sky," and considered that this was the best thing in the cave, & that this was an illusion! But I have spun my story to such an intolerable length that I must end it at once. I walked that afternoon... to Bell's Tavern, 7 miles, and, in lack again of any stage, carriage or horse, the next day 14 miles further, when at last we procured a buggy to Bowling Green..."
MORE THAN 200,000 APPLICANTS SEEK 89,000 CCC VACANCIES

State directors of CCC selection estimate that approximately 215,000 men will be available for the 89,111 vacancies which the Corps will fill at the beginning of the new (fourteenth) six-month enrollment period. Enrollment of replacements will begin October 1 and end at midnight October 20. Of the total selected, 85,348 will be juniors — from 17 to 23 years old — and 3,763 will be war veterans.

The operating program for the new period provides for maintenance of a nationwide total of 1,500 camps to which 300,000 enrollees will be assigned. The current authorized strength includes also 7,500 Indians and 4,000 residents of Hawaii, Puerto Rico, Alaska and the Virgin Islands.

"Reports forwarded to the Office of the Director from the various CCC State Directors of Selection indicate a large surplus of applicants," according to James J. McEntee, Assistant Director of the Corps. "No changes have been made in the eligibility regulations for the October replacement program. To be eligible for selection as a junior, a young man must be an unmarried citizen of the United States between the ages of seventeen and twenty-three, inclusive. He must be unemployed and in need of employment, in good physical condition, of good character and stability of purpose. If he has dependents he must be willing to allot home $22 a month out of his monthly basic cash allowance of $30."

CCC units assigned to the Service in Region One for the new period total 146. Eighty-seven of these will carry forward conservation-recreation programs in state and county parks, and 54 will be at work in national parks and monuments, recreational demonstration areas and other reservations administered by the Service. There will be two park camps in areas of the Tennessee Valley Authority. Three units will continue operations in the Virgin Islands.

FECHNER ANSWERS INQUIRIES ON CORPS MILITARIZATION

Questions asked by parents concerning the status of the CCC with respect to military duty were answered publicly this month by the office of Director Robert Fechner through issuance of a statement pointing out that enrollment in the Corps does not constitute a military commitment.

"The CCC cannot be inducted into the armed service of the United States," said the statement. Should there be an emergency the CCC "could become involved only by act of Congress designating it as a unit of preparedness or of active duty. The CCC accepts voluntary applications for six months' camp work with pay and vocational education, after which the boys are sent back into the general population with a view to jobs in private industry."
Although recent international events have affected profoundly certain local applications of the measures described, general interest nevertheless is afforded by publication in Poland of a careful study by Jan Julian Nowak of the administrative problems arising from programs of nature protection (Problemy Administracyjne Ochrony Przyrody, Nakładem Państwowej Rady Przyrody, Krakow, 1939).

A résumé, in French, of Mr. Nowak's extensively documented 95-page discussion, explains that the problems cited are by no means new. It continued, adapted and in part:

"The point of view alone has changed. Whereas formerly strictly economic motives dominated the question of natural conservation, those of a more idealistic character now come first. The earth, under human influences, has undergone negative changes. Man, having grasped the significance of the problem, has altered his views and, instead of destroying nature, he now defends it.

"This evolution has coincided with the development of richer thought concerning the very essence of governmental powers. . . The actions of central authorities now are shaped toward the defense of nature against selfish exploiters, and therein lies the germ of conflict between public and private interests. In that contest, social legislation always gains the uppermost position and, here and there, invades the field once reserved exclusively for civil jurisprudence.

"Still, the most generous actions of federal authority (or even those of international scope) with respect to conservation are inadequate for a realization of all results desired. The success of protective measures always will depend largely upon the initiative of the private citizen. . . . It becomes indispensable therefore that we broadcast to all the sentiment of conservation, for it must be a moral principle of central administration."

Mr. Nowak lists a bibliography of 78 items: 75 Polish, 2 French and 1 German.

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THE EARTH FOR NON-GEOLeGISTS

Our Amazing Earth, by Carroll Lane Fenton, (Doubleday, Doran and Co., 1939), offers at last a book that a geologist can recommend wholeheartedly to non-geological friends and acquaintances who wish to learn the interesting story of the earth without wrinkling their brows in study or burdening their minds with technical terms. In 340 pages of comfortably large-sized type the author describes the earth and sketches its history in terms of the forces that have made it and continue to change it. The text reads easily for it is written in a style that is light without being flippant.
The book opens with chapters entitled "Meet our Planet" and "Earth's Beginning" which give the reader a proper orientation. In the pages that follow the author is not handicapped by strict adherence to the conventional chronological approach. He attempts to answer the oft-repeated question of "How old is it?" and then proceeds in a series of more or less independent chapters to discuss "Earth's Hot Spots", "Streams' Varied Ways", "Snow into Glacier", etc. A brief but connected history of the earth occupies several of the closing chapters of the volume. The author records a wealth of information yet succeeds in reducing geology to its simplest terms. In achieving this simplicity certain controversial subjects are treated with an air of finality that is largely but not entirely unavoidable.

The volume is profusely illustrated. Without exception the scenes depicted are chosen from the North American continent or the insular possessions of the United States. It is interesting to note that more than half of the photographs were taken in National Parks and Monuments. The linecuts are the author's own work, though some are based on sketches or photographs made by others. The features shown are drawn as simply as possible and they form an important supplement to the Text. A final brief chapter gives worthwhile suggestions to those who wish to learn more about the earth -- either at home or in the field.—H.S.Ladd.

A NATURAL HISTORY SURVEY OF THE SMOKIES

How Great Smoky Mountains National Park is becoming better known throughout the nation and investigated more intensively by scientists is pointed out by Arthur Stupka, park naturalist, in "A Natural History Survey of the Great Smoky Mountains" (Touring, Vol. 6, No. 1, Asheville, 1939).

"As time goes by," writes Mr. Stupka, "the park is becoming better known, and the number of scientists who visit here and become interested in the region is increasing appreciably. The area is still in that fascinating pioneer stage when new species are frequently being reported and new facts concerning our plants and animals are coming to light at a rapid rate. In ecological work the possibilities at hand are practically without number; the altitudinal range of the various species, statistics on bird migration and population, the flowering and fruiting periods of plants at the varying altitudes, animal hibernation, and many others will serve to interest visiting scientists for a long time to come".

NEW YORK OFFICE OF TRAVEL BUREAU ISSUES NEWS LETTER

Travel and Recreation, a mimeographed bi-weekly news letter, made its editorial debut August 19. It is issued by the New York (45 Broadway) office of the United States Travel Bureau and will be concerned primarily with "items of news in the field of travel and recreation which should receive special note, the purpose being to furnish up-to-the-minute information on national parks, monuments, historic sites, state parks and every place where outdoor recreation is to be found."
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Books, manuscripts, photographs and valuable historical objects are being added to the collections of many Service areas as the public becomes increasingly aware that the facilities with which the parks are equipped adapt them admirably for service as repositories.

The library of American civil war history at Fredericksburg and Spotsylvania National Military Park has grown to 1,436 items as a result of negotiations carried out with city, state and university libraries. Noteworthy donations have been made by the University of Michigan, Michigan State Library, Wisconsin Historical Society, the Chicago Public Library and the Michigan Department of the G. A. R. Among other materials acquired recently by the park were several scenes from the famous Manassas Panorama, which once was regarded as one of the marvels of Washington.

A diary just presented to Fort Pulaski National Monument contains the notes of a Confederate officer who was stationed on Cockspur Island from December 1861 until the siege and surrender in April 1862. More valuable still is the journal which Lieutenant L. Wilson Landershine wrote while a prisoner on Governors Island, in New York harbor, by expanding the daily notes he had made at Fort Pulaski. It contains considerable unpublished information. Accompanying the journal and diary was a stereoscopic view of the fort walls.

KENNETH A. TAPSCOTT

Associate Landscape Architect Kenneth A. Tapscott, for six years a member of the Service's Branch of Plans and Design, died in a Richmond hospital August 22 after an emergency operation for appendicitis. Burial was in Arlington National Cemetery where military services were conducted.

Born 46 years ago in Brooklyn, New York, Mr. Tapscott graduated from Cornell University in 1915. He enlisted in the Army in 1917, gained the rank of second lieutenant, and participated in four battles in France. He was wounded at Blanc-Mont. After entering the Service in 1933 he played a vital part in planning the development programs of the national military parks, particularly those in Virginia.

Those are the bare biographical facts. To describe adequately the evaluation placed upon his character and services by all who knew Mr. Tapscott exceeds ordinary expression. Perhaps it was summed best by one of his associates: "I never knew a kindlier, more conscientious man. Entirely aside from his professional ability, which itself will be wanting, we shall always miss him."
CHARLES H. FAIRBANKS, born in Bainbridge, New York, studied at Swarthmore and was a student at the University of Chicago under Dr. Fay-Cooper Cole, professor of anthropology. He spent nearly two years directing archeological excavations at Harrison, Dayton and Charleston, Tennessee, and was in charge of the preservation of materials collected in the Chickamauga Basin. He entered the Service in 1938 at Ocmulgee National Monument.

Biographical notes on H. S. LADD, RALEIGH C. TAYLOR and ORIN M. BULLOCK, JR., have already appeared in this section.