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THE REGIONAL REVIEW



FT. MATANZAS NATIONAL MONUMENT—

FLORIDA.

NATIONAL PARK SERVICE

REGION ONE

RICHMOND VIRGINIA

JULY 1939

VOL. III - NO. 1

THE COVER

Fort Matanzas, like its elder companion Fort Marion, 16 miles away at St. Augustine, is a venerable coquina stronghold built on the Matanzas River to protect the interests of Spain during the dramatic period of international rivalry for possession of sunny Florida. Matanzas means bloody and the fearsome name was derived from the slaughter of some 300 French Huguenots in the vicinity in 1565. The 40-foot-square fortress, situated on Rattlesnake Island to guard the south inlet of the river, became a national monument by presidential proclamation of October 15, 1924. It is pictured on the cover by Samuel O. Smart, Assistant Landscape Architect.

THE REGIONAL REVIEW

VOL. III · NO. 1

JULY 1939

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REGIONAL DIRECTOR

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THIS MONTH

THE BLUE RIDGE PARKWAY

By Stanley W. Abbott Page 3

THE HISTORY AND STATUS OF INTERPRETIVE WORK IN NATIONAL PARKS

By Carl P. Russell Page 7

INSURANCE FOR THE EARTH DAM

By Tyler B. Kiener Page 15

FATHER MILLET CROSS

By Thor Borresen Page 20

THE PETERSBURG CRATER -- THEN AND NOW

By Raleigh C. Taylor Page 27

Publications and Reports : : : The CCC

Bibliographical Notes

Miscellany

THE UNITED STATES
DEPARTMENT OF THE INTERIOR
· NATIONAL PARK SERVICE ·
REGION ONE ~ RICHMOND, VIRGINIA



SHARP TOP, ONE OF THE PEAKS OF OTTER

THE BLUE RIDGE PARKWAYA New Element in Recreational Planning

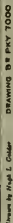
By Stanley W. Abbott,
Acting Superintendent,
Blue Ridge National Parkway Project,
Roanoke, Virginia

Recent emphasis on planning regionally for recreation draws attention to the simple fact that national park development so far has been limited for the most part to the featured areas which are the "end" of the motorist's journey from home. For the average family the way is long to reach the wilderness, especially in the East where travelers must drive their automobiles among trucks and buses through miles of commercialized roadway before they "get away" and again as they return. To the development of recreation the Blue Ridge Parkway is, therefore, a new note -- something of a first answer to the national park approach road.

The project is 480 miles long, averages 2,500 feet in elevation, and will connect Shenandoah and Great Smoky Mountains National Parks. It is the longest road ever to be planned as a single unit in the history of American road-building. But the real interest of the work lies in the dramatic variety of the vast mountain country being made accessible, the thought that the motorist will travel for nearly the entire length of two southern states always in the invigorating coolness of the high mountains, and that through this first tourway will come the fusion of two of America's most popular national parks into one huge recreational system. Mindful of the many cliff-sides, chasms and spur ridges that lay ahead to thwart passage of a modern motorway along the Blue Ridge, more than one expert planner predicted that it would "fall of its own weight" when this \$30,000,000 proposal first was made five years ago. Now, with more than 100 miles ready for traffic and an additional 190 in various stages of construction, and with the entire route plotted on survey maps, a steady advance toward its completion seems reasonably assured. Its character and usefulness should be amply demonstrated during the next two years as added miles are opened to connect a continuous route from Roanoke, Virginia, to Asheville, North Carolina.

The completed portions, such as may be seen by visitors to the work below Blowing Rock and Roanoke, will differ greatly from the usual commercial highway principally because of the parkway idea. Likewise, and because it constitutes a first adaptation of the broad right-of-way to a rural region, it will differ from such parkways as Colonial and Mt. Vernon, and those near New York City which have proved so sound in the suburban plan. It will bear only remote likeness to the Skyline Drive in the Shenandoah even though it was from the enthusiastic reception of that road by the public that the Blue Ridge project had its birthright.

According to the parkway principle, the states of Virginia and North Carolina, through their highway departments, are acquiring for the feder-



The Blue Ridge Parkway

is laid out expressly as a route for the leisurely tourist, but there has been little compromise in meeting the requirements of safety, reasonable speed, and ease of driving. Viaducts, tunnels, retaining walls and other special devices of the highway engineer have been employed in subduing the sharp curves and steep grades that we associate habitually with the mountain road. This maintenance of a high standard of modern road has meant the "scar" of machine construction in certain rough and steep-sided mountains. Occasionally the excavation to create the 30-foot road section mounts as high as 100,000 yards to the mile. Technicians are confident nevertheless that landscape and erosion control work, combined with time, will largely erase this evidence of Diesel power and dynamite. For the sake of safety, native stone and timber bridges carry the Parkway over or under important transmountain highways and do away with the crossing of traffic at grade. Operating policy will limit the use of the drive to passenger cars only, eliminating the annoyance of the large truck and bus.

In order to keep construction costs within reasonable bounds while still maintaining standards of curvature and grade, and what is more, to avoid excessive scar, it has been necessary to skirt some of the more rugged regions with the result that the Parkway does not exclusively follow the skyline, but assumes a changing position in the mountains. Like the movie cameraman who shoots his subjects from many angles to heighten the drama of his film, so the shifting position of the roadway unfolds a more interesting picture to the traveler. The sweeping view over the low country often holds the center of the stage, but seems to exit gracefully enough when the Parkway leaves the ridge for the more gentle slopes and the deeper forests.

The panoramic landscapes seem even bolder for these contrasts. Of quite different character, but still of interest to the overall pattern, are the quiet fields and pastures which make unusual designs in many highland sections. Here among the strange bluffs and crags and waterfalls an abandoned log cabin, or a water mill long past its days of grinding grist, chronicles the human history of these very old American mountains. As much as possible these featured players of nature and of history on the Blue Ridge have been billed for continuous performance, and funds made available to the Service have been used to acquire many of them in their setting and well beyond the normal widths of right-of-way. In places an area of 6,000 to 10,000 acres embraces a whole group of mountains. Selected also for logical distribution along the Parkway, roughly at 20-mile intervals, these parks will provide the setting for wayside travel facilities. Several areas are being developed now through the Civilian Conservation Corps and Emergency Relief Administration work programs. Picnic and camp grounds, motor service stations, coffee shops and modest lodges will complement those of the tourist towns scattered through the mountains, rounding out a self-contained motor vacation land.

Along with the provision of facilities for many forms of active recreation, large areas in these parks will remain undeveloped so that the adventurous may withdraw from the Parkway traffic to tramp or fish in the unbroken forests. Among the notable geographic features of the Parkway

route in Virginia are the George Washington and the Jefferson National Forests, the Peaks of Otter, and the Pinnacles of Dan; and in North Carolina, Grandfather Mountain, Linville Gorge, the Craggy Gardens, and Mount Mitchell, the highest elevation east of the Rockies. Rounding Asheville the Parkway will dip downward to cross the French Broad River and then will rise high in the Pisgah National Forest to approach the Great Smoky Mountains, probably near the Qualla Indian Reservation of the eastern Cherokees.

Plans for maintenance and protection of the Blue Ridge Parkway by the Service call for headquarters areas at 60-mile intervals, or in each third park. Management of traffic on the Parkway and ranger patrol of an aggregate boundary of 1,000 miles, along which abut many private holdings, necessarily will develop problems of administration, certain elements of which will be peculiar to the Parkway work. Take for example the problem of maintaining Parkway lands. The charm of many sections in the Blue Ridge lies in the farm fields and pastures. Should these cultivated areas or the Parkway strip itself be allowed to return to forest indiscriminately, many of the fine views would be lost. The Service can hardly expect to grow the corn and wheat, or to tend the cattle in the pastures, and so has resorted to leasing at nominal rentals those Parkway lands naturally adapted to cultivation. In this manner the roadside picture will be maintained without cost to the United States and better neighbors will be made of nearby farmers.

The Blue Ridge Parkway is being built under contracts supervised by the Public Roads Administration whose engineers have prepared the plans collaboratively with the Service in accordance with the interbureau agreement. Amid much talk of a nation-wide system of parkways and freeways the steady advance toward completion of a pioneer national tourway seems especially timely. While any national system doubtless would concern itself primarily with motorways that will serve as express regional



PARKWAY SEEN FROM ROCKY KNOB,
A Major Recreational Area in Virginia

routes, many planners believe that there is a place for the road of the purely recreational type. Since the Blue Ridge Parkway will provide days or weeks of well rounded vacation high above the summer temperatures, remote from the towns and cities and yet within a single day's travel for 60,000,000 persons, it should test amply the soundness of the idea. Many officials see emerging from this and from the Natchez Trace Parkway programs a strong case for a new means of bringing national parks closer to the people.

THE HISTORY AND STATUS OF INTERPRETIVE WORK IN NATIONAL PARKS¹

By Carl P. Russell,
Supervisor of Research and Information,
Washington

When Stephen T. Mather assumed the directorship of the national parks in 1916, he determined at the outset to make the park system known and understood. Publicity and educational endeavors were made a part of his projected program even before a staff had been organized. Surveys of outdoor educational methods and nature teaching as practiced in several European countries had been made in 1915 by C. M. Goethe and his reports of the success of this work had inspired a few Americans to establish similar educational work in the United States. The California Fish and Game Commission in 1918 sent its educational director, Dr. Harold C. Bryant, into the Sierras to reach vacationists with the message of the conservationist. Yosemite National Park and the playground areas about Lake Tahoe witnessed the introduction of "nature guiding" during two summers prior to the inclusion of the work in the field program of the National Park Service.

In 1920 Mr. Mather and some of his friends joined in supporting this nature teaching in Yosemite and Dr. Bryant and Dr. Loye Holmes Miller were employed to lay the foundation of what has continued to be an important part of the program of the Branch of Research and Information. About this same time a Yosemite ranger, Ansel F. Hall, conceived the idea of establishing a Yosemite museum to serve as a public contact center and general headquarters for the interpretive program. Superintendent W.B. Lewis endorsed the plan and the old Chris Jorgenson artists' studio was made into a temporary museum with Mr. Hall in charge as permanent educational officer. The same year found a museum program under way in Yellowstone National Park where Milton P. Skinner was made park naturalist and in Mesa Verde National Park where Superintendent Jesse Nusbaum organized a museum to care for the archeological treasures brought to light among the ruins of prehistoric man's abode. Glacier, Grand Canyon, Mount Rainier, Rocky Mountain, Sequoia and Zion quickly organized their educational programs along the lines established by Yosemite and Yellowstone and in 1923 Ansel F. Hall, with headquarters in Berkeley, California, was designated to coordinate and direct the interpretive work in all parks. Working with Dr. Frank R. Oastler, Mr. Hall in 1924 organized a comprehensive plan of educational activities and defined the objectives of the naturalist group.

¹Abstracted from a talk given as part of the In-Service Training program of the National Park Service. The following may be consulted as sources of information concerning the philosophy and standards which have prevailed in shaping interpretive activities: Harold C. Bryant and W. W. Atwood, Jr., Research and Education in the National Parks (Government Printing Office, Washington, 1932), pp. 1-66; Ansel F. Hall, "Educational Activities in the National Parks." First Pan-Pacific Conference on Education (Government Printing Office, Washington, 1927), pp. 397-410; C. J. Hamlin, "Studying Nature in Place." First Pan-Pacific Conference on Education (Government Printing Office, Washington, 1927), pp. 435-438; George M. Wright, Joseph S. Dixon and Ben H. Thompson, Fauna of the National Parks of the United States. A Preliminary Survey of Faunal Relations in National Parks (Government Printing Office, Washington, 1933).

FUNCTIONS AND METHODS IN NATIONAL PARKS INTERPRETIVE WORK

OBJECTS

DIFFUSION OF KNOWLEDGE
 GENERAL PROMOTION OF CONSERVATION
 ADVANCE PUBLIC APPRECIATION OF THE NATIONAL PARKS
 INCREASE OF KNOWLEDGE
 PRESERVE VANISHING DATA
 CONDUCT SCIENTIFIC INVESTIGATIONS

DISCOVER AND PRESERVE
 FIELD & LABORATORY RESEARCH
 SCIENTIFIC COLLECTIONS
 ECOLOGICAL RESTORATION
 PUBLISH FINDINGS
 EXPOSITION
 MUSEUM EXHIBITS • TRAILSIDE EXHIBITS
 EXHIBITS IN PLACE • NATURE TRAILS • TRAILSIDE NOTES & GUIDE BOOKS
 INSTRUCTION
 FACILITIES FOR RESEARCH • SPECIAL CLASSES • PUBLICATION • TECHNICAL ADVICE TO ADMINISTRATIVE STAFF
 PRESERVES
 COLLECTIONS
 LABORATORIES
 BIBLIOGRAPHIES & LIBRARIES
 FIELD TRIPS • AUTO CARAVANS

METHODS

In 1924, C. J. Hamlin, was president of the American Association of Museums. The opportunities opened by national park museums were called to his attention by Mr. Hall and the American Association of Museums immediately investigated the possibilities of launching adequate museum programs in the parks. In response to recommendations made by the Association and the National Park Service, the Laura Spelman Rockefeller Memorial made funds available with which to construct a fireproof museum in Yosemite National Park. This, one of the first permanent national park museums, became the natural center around which revolves the educational program in Yosemite. Even before the Yosemite museum installations had been opened to the public, demonstration of the effectiveness of the institution as headquarters for the educational staff and visiting scientists convinced leaders in the American Association of Museums that further effort should be made to establish a general program of museum work in national parks. Additional funds were obtained from the Laura Spelman Rockefeller Memorial and new museums were built in Grand Canyon and Yellowstone National Parks. Dr. Hermon C. Bumpus, who had guided the museum planning and construction in Yosemite, continued as the administrator representing the Association and Rockefeller interests and Herbert Maier, now Associate Regional Director, Region III, was architect and field superintendent on the construction projects. It was Dr. Bumpus who originated the "focal point museum" idea so well represented by the several small institutions in Yellowstone, each one concerned with a special aspect of the park story, and so located as to tell its story while its visitors were surrounded by and deeply interested in the significant exhibits of the out-of-doors. The trailside exhibits now commonly used in many national parks and first tried at Obsidian Cliff in Yellowstone were an out-growth of the focal point museum idea.

When the museums of Yosemite, Grand Canyon, and Yellowstone had demonstrated their value to visitors and staff alike, they were accepted somewhat as models for future work, and upon the strength of their success, the Service found it possible to obtain regular government appropriations with which to build more museums in national parks and monuments. When PWA funds became available, further impetus was given to the parks museum program and a Museum Division of the Service was established in 1935, embracing historic areas of the East as well as the scenic national parks. Today there are 68 national park and monument museums and two more are planned for the immediate future.

In order to stimulate balanced development of interpretive programs, the Secretary of the Interior appointed a committee of educators under the chairmanship of Dr. John C. Merriam to study the broad educational possibilities in national parks. In 1929, this committee recommended that an educational branch, with headquarters in Washington, be established in the Service. It was further recommended that the committee continue to function on a permanent basis as an advisory body, "whose duty it shall be to advise the Director of National Parks on matters pertinent to educational policy and developments in National Parks."

Dr. Bryant, who since 1920 had served as a summer employee on the Yosemite educational staff and who had been a member of the Committee on

Study of Educational Problems in National Parks, was made head of the new branch on July 1, 1930. Two assistants were appointed to work with him in Washington. One assumed charge of work relating to earth sciences; the other directed historical and archeological developments. Mr. Hall, as Chief, Field Division of Education, continued in charge of forestry and educational work in the field. A Division of Public Relations, within the Washington Office, continued in one of the first Service activities (dissemination of information) established by Mr. Mather and became in 1930, a unit of the educational branch. The Service photographer, previously located in the Berkeley, California, laboratories of the Service, was transferred to Washington to become a part of the central organization.

Antedating the establishment of the branch by one year was the wildlife survey instituted in national parks by George M. Wright who began his career in the National Park Service as a park ranger in Yosemite in 1927. Mr. Wright, trained under Dr. J. Grinnell in the Museum of Vertebrate Zoology, University of California, recognized the necessity of defining wildlife policies for the Service. His approach to an understanding of the status and needs of the fauna and flora of the parks was entirely practical in that he and his associates went directly to the field for first hand information. Upon the basic data assembled by Mr. Wright was shaped the wildlife policy of the Service which now has good definition and reflects the highest conservation thought. So that the Service may adhere to the policies and objectives defined after the Wright surveys were made, a Wildlife Division has been established. In 1933 Mr. Wright was made the first chief of this division. The unit now consists of a group of ecologists who coordinate the wildlife program from Washington; regional technicians who maintain close contact with all field projects affecting wildlife values; a fish specialist with headquarters at Salt Lake City; a field naturalist-at-large who works out of the Region IV headquarters, San Francisco, and a score or more of park employees from among the rangers and park naturalists who serve their park superintendents in making continuous observations and reports on ecological matters in their respective areas.

In the field of geology, the Service conducts important programs of interpretation and preservation of scenic and scientific values in each of the major national parks and in those many national monuments where the earth sciences find exceptional representation. A number of the park naturalists are geologists of recognized professional standing and each regional director benefits by the presence of a geologist on his staff. In Washington, two geologists under the direction of the Chief of the Naturalist Division, who is a geologist, coordinate the geological activities of the Service. Collaboration with Service engineers on bridge construction, dams, and water supply has become a recognized part of the geologist's work. Investigation of physiographic features and paleontological values in proposed new Federal parks and monuments is a growing responsibility of the geologist group. Not all geological research necessary in national parks and monuments can be done by the small staff of technicians now employed, but so far as possible they meet the requests from superintendents and park naturalists who require original studies

upon which to base their interpretive programs. The Carnegie Institution of Washington, the National Academy of Sciences, the United States Geological Survey, and many museums and universities conduct geological investigations in national parks and monuments. These research activities of cooperating agencies are coordinated by the Service geologists.

The Naturalist Division, the pioneer unit known first (1917) as the Educational Division under Robert Sterling Yard, has at one time or another mothered the other division of the branch. Photography, forestry, museums, geology, wildlife, and the park naturalist program all have grown out of this original educational organization. At present 34 park naturalists and their assistants are employed on a permanent basis. This summer their forces will be increased by the employment of 106 ranger naturalists. The work of this widely scattered staff which served 4,603, 910 park visitors last year with lectures, guided trips, and museum offerings is coordinated by the Naturalist Division, the Washington staff of which consists of a chief, two assistants (the geologists mentioned above), and two stenographers. No regional representatives of the division, other than regional geologists, have been employed, which means that there has been no decentralization of the interpretive program in the natural sciences. The flow of paper work from the field continues to pour into the Washington Office funnel neck without preliminary filtration in the regional machines. Interpretive programs both in national and state parks receive but little attention in the regional offices. Regional educational officers should be added to the staff.

Park naturalists are appointed to permanent positions through usual Civil Service channels; ranger naturalists are recruited from the ranks of naturalists and teachers throughout the country. The Yosemite School of Field Natural History, founded by Dr. Bryant in 1925, makes important contribution to the training of new employees in the naturalist field. Five permanent appointees now on the Service staff received this Yosemite training. This year (1939) 24 ranger naturalists will be employed who have graduated from the Yosemite school. Experience with this unique training program encourages the idea of additional schools. The great benefits which have resulted from the Yosemite work can, with careful planning, be duplicated in a Yellowstone school.

In 1931, the chief photographer was brought from Berkeley, California, to Washington to work with the Chief of the Naturalist Division. Photographic laboratories and staff were transferred again in 1935, this time to the Office of the Secretary of the Interior. George Grant, who pioneered in the photography of the National Park Service, is now Chief Photographer for the Department of the Interior. Most of the parks and the regional offices employ photographers and operate photo laboratories. The program of work in this important field will soon reach a stage that will require coordination and guidance from within the Service.

By 1933 the forest protection program had attained such proportions and loomed so importantly in the general administrative scheme of the Service that a Branch of Forestry was established and the Chief Forester, formerly associated with the Field Division of Education, was transferred to Washington.

The Act for the Preservation of Historic American Sites, 1935, established a Branch of Historic Sites and Buildings within the Service and removed the program of historic conservation and interpretation from the Branch of Research and Information. The Branch of Historic Sites approaches historic sites and historic objects as source materials for the study and teaching of history. Pre-history, too, is embraced in its program. Nearly all of the national parks and monuments possess some historic or archeological values and more than half of the Federal areas are primarily historic in interest and value. This general distribution of activities in history and archeology makes for overlap of the programs of the Branch of Research and Information and the Branch of Historic Sites and Buildings, especially in the interpretive program of the Museum Division. The dual responsibility of the Museum Division is met by a cooperative arrangement which integrates the museum activities of the two branches.

The name of the branch was changed in 1938 from "Research and Education" to "Research and Information". Perhaps "Research and Interpretation" would be a more appropriate appellation.

The Field Division of Education, which until 1937 embraced the broader aspects of parks educational work, became in that year the Western Museum Laboratories directed by the Assistant Chief of the Museum Division. The coordination of park naturalist activities in western parks became the responsibility of the Naturalist Division. Library developments, bibliographical projects and an extensive program of exhibit planning and preparation emanate from the Western Museum Laboratories. A notable innovation in the Berkeley work is the miscellaneous services program through which the parks and regional offices are supplied with a variety of educational equipment such as laboratory tables, desks, specimen storage cases, posters, markers, signs, and lantern slide filing cabinets. Mimeographing, repair of books, and photo finishing add greatly to the service rendered to park superintendents and naturalists. About 250 WPA appointees are employed in these laboratories.

CCC, WPA, and PWA have made it possible for the Branch of Research and Information to keep fairly abreast of the fast moving programs of development within the Service, which since 1933 have heaped responsibilities upon all units concerned with preservation of natural values within the parks. The state park programs and the recreational demonstration projects also have increased the load carried by the branch.

Six geologists, eleven wildlife technicians and nearly 300 museum workers are now employed with emergency funds. The regional staffs and the museum laboratories in Washington and Berkeley, California, are quite dependent upon the allotments made from these sources. Plans have been made to stabilize research programs through establishment of permanent positions in the Naturalist and Wildlife Divisions and a permanent nucleus of museum curators and preparators will, as soon as possible, be established to maintain the heavy museum program always demanding attention.

The rapid expansion of Service activities supported by the emergency programs has hurried the establishment of two divisions within the branch

and yielded a crop of technical reports on research projects which, in the ordinary course of events, would not have matured for many years to come. Advances have been made in park concepts and methods which give great satisfaction to all conservationists.

It is heartening to all workers within the branch to review these endorsements and recommendations made by the park superintendents at their 1939 conference:

1. That the interpretation of natural and human history in national park areas be considered as a primary objective. The basis of such interpretation should be organized research by members of the National Park Service, supplemented by the invited cooperation of other interested Federal, scientific, and educational agencies. To accomplish these purposes, research by local field technicians must be recognized, encouraged, and strengthened. The National Park Service should preserve a sense of balance between its research and interpretative functions. The importance of museums in presenting the results of research, aiding interpretation, and providing laboratory and library facilities is recognized.

2. That technical sheets, defining the interpretative program, and its relation to a park area, be included in park master plans.

3. That, to improve the Service's interpretation activities and their coordination, regional technical positions be established to aid in the park interpretative programs.

4. That an effort be made to foster the publication of a friendly independent illustrated periodical in order to promote a broader understanding of the significance of Service areas, their conservation and use.

5. That a committee, comprising a member of the Advisory Board on National Parks, the Supervisor of Research and Information, the Supervisor of Historic Sites, and three superintendents, one each from the fields of history, prehistory, and natural history, be appointed to survey existing acquisitions and the conditions and limitations under which they were acquired; to review tenders of materials now pending; and to formulate policies for the National Park Service pertaining to the acceptance, use and safeguarding of these materials.

The Branch of Research and Information, originally designed to develop and direct public contact work within the national parks and to crystallize Service plans for research in earth sciences, life sciences, and appreciation of nature has added to its functions the special tasks of wildlife management, geological conservation, exhibit planning, and centralized museum laboratory work both for Federal areas and state parks. This new program will grow just as did the original program projected for the Branch. To guarantee its continuity and permanency, the staff will be established on a regular service basis. Cooperation on special problems will be needed always from the National Museum, the Biological Survey, the Geological Survey, the Bureau of Fisheries, and other Government

organizations, but a staff of national park specialists, employed by the National Park Service, will be required to coordinate all work bearing upon the preservation of natural values and their interpretation.

A library program will be developed to coordinate the existing library work in the parks and to promote adequate library planning both in the field and the Washington Office. Publications of the results of technical studies and of the much needed popular material on scientific aspects of park stories will be advanced. A science editor should be added to the staff. Photography, which now forms an important part of the scientific and interpretive functions of the branch, should be coordinated throughout the field, and to accomplish this a chief photographer should be employed. Most pressing among the needs of the Branch is regional administrative representation. Regional supervisors should be appointed to coordinate the activities in wildlife work, geology, museum development, and general interpretive endeavors both in federal areas and state parks.

If, during the next decade, the Branch of Research and Information can progress as it did during its first ten years of existence, it will indeed have served the cause of American conservation.

NATIONAL MONUMENT AND NATIONAL SEASHORE

A recent letter of Associate Director A. E. Demaray to Marion T. Gaines, editor of The Pensacola (Florida) News-Journal, points out the principal difference between a national seashore and a national monument and explains the opportunities for public service which are afforded by the establishment in May of Santa Rosa Island National Monument (see The Regional Review, Vol. II, No. 6, p. 20). The letter said, in part:

The difference between a national monument, such as Santa Rosa Island, and a national seashore, such as we have in project status at Cape Hatteras, is largely a matter of size. They will both be administered under the same laws, rules and regulations. In Santa Rosa Island National Monument, the public has the smallest area acceptable for administration by this Service in that vicinity, it being just large enough to represent the barrier reef type of land building on a scale of national geological importance. It fits the national monument classification exactly under the law providing for national monument establishment. If a considerably larger section of the coastal region were offered, however, a correspondingly greater development for public benefit and enjoyment could be made, because the area would then be large enough to cover a greater variety of recreational and scientific interests. Such a project would fit the national seashore classification, just as the Cape Hatteras National Seashore project does. It would, we feel, prove a distinct advantage to Florida and the Nation as a whole in the same sense that the Cape Hatteras area, and the Grand Canyon National Park, the Yellowstone, Great Smoky Mountains and all the other national park system areas are advantageous to the local people and the Nation as a whole.

INSURANCE FOR THE EARTH DAM

By Tyler B. Kiener,
Associate Engineer,
Richmond, Virginia



EARTH DAM AND SPILLWAY AT DOUTHAT STATE PARK, VIRGINIA
Containing Nearly 200,000 Cubic Yards of Fill, This is the Largest
Earth Dam Built by CCC Enrollees in Region One



S CHILDREN many of us have delved into the banks of some small stream with our bare hands, transferred the soil to such a pile of sticks and stones as had been found close by, and rudely molded the mixture into what may be described -- by some stretch of the imagination -- as an earth dam. Working feverishly to keep ahead of the rapidly rising water behind it and slapping clods of clay into those breaches through which the relentless flood seemed most likely to undermine our structure, we produced, after a considerable struggle, a solid barrier between the banks of the stream.

Our momentary advantage was soon lost, however, and the small basin which was formed behind the barrier began to fill with water, the surface of which approached uncomfortably close to the top of the dam. By building it a few inches higher the tide again was stemmed, but we discovered shortly that the contest was unequal, and so resigned ourselves to the inevitable but somewhat fascinating climax of seeing an earth dam overtopped. The water crept toward the crest, began to trickle over in several places, and finally the full flow of the stream poured across

the top. Signs of distress promptly appeared in the structure. Under the flowing water its earth portions were dissolving like sugar, and great gaps were cut through the top which permitted larger torrents to gush through. The rate of dissolution became progressively faster and at last our dam gave up the ghost in far less time than had been required for its creators to put it together.

Our childish minds, however, did not register great concern over the disaster. Having a vague purpose, probably confined to the pleasure of playing in the water, we did not realize how much more simple our construction job would have been if we had been able to isolate the running water and not have it build up a pool behind us as we worked. Neither did we recognize that our dam, once built, would have remained intact had we routed the water over a bed more resistant to its action than the soil contained in the dam.

It is quite possible to provide these construction advantages, and today every earth dam built by the National Park Service's cooperation is protected, during its construction, from the stream which it will impound, and after its completion by a permanent passageway for the same stream. The earth embankment either partially or wholly complete may represent an investment of many thousands of dollars in labor and equipment rental and it is therefore proper to insure against its loss by paying a premium in terms of special construction. In a good many instances this premium insures not only against loss of the embankment itself, but against loss of life and property damage in the valley below the dam, for a very large volume of water is often stored behind our dams and its sudden release would sweep to destruction all that stood in its way.

To deal with such potentially dangerous conditions, one might ask at this point why not build a dam of concrete, or stone masonry, or some other equally durable material and avoid the risks which appear to go hand in hand with earth dam construction. Apparently, this question does not seem to have occurred to agencies making use of the Civilian Conservation Corps to build their dams, for we find the following statement in a recent press release from the office of Mr. Fechner, Director of the Corps, relative to some 350 dams built by his enrollees:

Though concrete and masonry dams are erected wherever the terrain and water conditions require it, 90% are of rolled earth with a concrete or heavy clay core.

Consideration has been given to this question, however, for a definite reason lies behind the popularity of the earth dam in spite of its accompanying hazards. The answer is to be found in the financing of CCC construction programs. Each CCC camp is allotted but a small sum for the purchase of building materials. The earth dam meets the resulting financial situation admirably therefore, because building an embankment out of local soils across a valley requires only small expenditures for construction materials. Compared with a concrete or stone masonry barrier its economic advantage is outstanding and, if properly constructed, it is equally safe.



PROTECTION DURING CONSTRUCTION: When a small stream is to be dammed by an earth embankment, the simplest method of segregating the stream flow consists of laying a pipe or conduit in the valley at the same general level of the stream and diverting the water through it. The embankment may then be built around the pipe without inconvenience. If a valve is set at the upper end of the pipe, the resulting arrangement will serve as a drain for the

lake after the dam is completed and our insurance premium which consists of expenditures for the pipe and valve has not only afforded us protection during construction, but it also is converted into a useful operating part of the completed dam. The designer, it should be noted, is encumbered with the problem of choosing the correct size of pipe for this purpose, and a mistake may invite serious trouble. Heavy rains occurring while the embankment is under way will swell the stream beyond its normal flow, and if the pipe is not large enough to carry away the flood flow, water will rise behind the embankment and possibly overtop it.

A larger stream would naturally require a larger pipe, probably far in excess of the size needed to serve later as a drain so that our insurance premium is only partially compensated by subsequent conversion in the manner described above. It follows, as we assume larger and larger streams, that insurance costs will increase to such proportions that other methods of protection must be adopted upon which the premium is cheaper.

Generally speaking, stream flow varies with rainfall, and east of the Mississippi the precipitation is much heavier in the winter and spring months than in the summer. It is therefore possible to schedule a construction program so that an earth dam may be built across a stream in a period of least potential rainfall. In other words, instead of spending an exorbitant sum for a large outlet pipe, a smaller pipe is



SPILLWAY OF EARTH DAM DURING CONSTRUCTION

The Gap in the Masonry Was Arranged Purposely to Pass Excess Flood Waters While the Earth Embankment Was Being Placed at This Dam at Laurel Hill Recreational Demonstration Area, Pennsylvania

selected and the dam is built during those months when the danger of heavy runoffs is at a minimum. Obviously, a certain risk is assumed with this procedure because a flood may occur during the time when the records show it most unlikely, but the odds are in our favor, and if we have not tempted fate too strongly, our job can be successfully completed.

There are, unfortunately, limiting factors to the use of the above method. For instance, the bulk of the earth fill may be so large that it is impossible to complete it in one short dry season with the equipment on hand for its construction, and to permit the partly finished embankment to brave a season of heavy rainfall would court disaster. There are two general methods of meeting such a situation.

If a small gap is left in the earth dam, flood waters in excess of that removed by the pipe will flow through this gap. Later, at an opportune moment and after the remainder of the embankment is completed, the gap is closed. Although apparently a simple solution, this method has its disadvantages. The break in the otherwise solid mass of embankment complicates the placing of the balance of the fill, and the possibility of getting inferior workmanship while closing the gap is greatly increased. Thus, our insurance premium takes the form of difficult and slower construction. Nevertheless, this method is widely used.

A second scheme is perhaps the most satisfactory solution of the problem and can be adopted readily when the spillway of the dam is to be a concrete or stone masonry overflow structure founded in the valley floor. Such a spillway usually contains a drain channel which takes the place of our previously mentioned pipe. To conduct flood water which is in excess of the drain's capacity, an opening is left in the masonry. After the earth embankment is completed the opening is filled. One of the illustrations shows construction planning of this type. The spillway shown is part of the large earth dam recently completed at the Laurel Hill Recreational Area in Pennsylvania. Actual flood water may be seen discharging through the gap left for this purpose.



EALING IN FUTURES: We now take the position that our earth dam has been successfully finished. In common with all man-made structures it has been built to render useful service for an estimated period of time, and since it represents a sizeable investment it has been insured in order that this life may be sustained. It must be remembered that when water flows over the top of an earth dam its life may be abruptly ended, and the insurance policy which we have taken out guards against this particular possibility. The premium, which we pay in one lump sum, is represented by the spillway of the dam, and its amount depends upon the length of time for which we require protection, because a spillway must be larger if the dam's life is to be longer. The reason for this will appear further on.

The vagaries of the stream flow which were mastered during construction still remain to trouble us after the dam is built and will con-

time to be a source of potential danger for as long as the dam is expected to stand. To meet this condition the spillway must not only conduct the stream safely by the dam, but it likewise must conduct in the same manner every flood which will occur during the dam's life. We are dealing no longer with a brief construction period. We are compelled to predict the size of the greatest flood which will take place in a period of many years. We must presume to foretell the future. How may this be done?

When an English poet said "Coming events cast their shadows before" he probably did not realize that many state and federal agencies of this country later would take him at his word and arrange for an application of his theory to the prediction of flood flows. This is exactly what has been done, however, for these agencies have collected "shadows" in the form of accurate rainfall records and stream flow measurements for long periods of time, and they are available for all who wish to try their hand at forecasting the "coming event".

By studying the records of any particular stream we immediately find that the larger floods do not occur very often, and further examination shows that the larger the flood the less frequently it takes place. If the record is long enough, and after we have performed the necessary mathematical gymnastics upon its vitals, we are shortly able to demonstrate that a certain sized flood will be equalled or exceeded only once in a certain number of years, and that various other sized floods will be equalled or exceeded at various other frequencies. We therefore select the flood which will be equalled or exceeded only once during the required life of our dam and design the spillway to pass it safely, together with some extra allowance for good measure which is usually termed a factor of safety. At this point it should now be clear to the reader why a dam with a longer life requires a larger spillway.

Unfortunately, flow records of the stream which we propose to dam cannot always be obtained. This is generally true of the streams impounded by CCC under the supervision of the National Park Service in Region I for the simple reason that records are available only for the larger and more important rivers. We are obliged in such cases to resort to frequencies and flows which are derived from rainfall characteristics of the vicinity of our dam. The principle has some similarity to the generalized explanation already given, and has proven satisfactory.

In conclusion it may be truthfully stated that no man has ever found a way to forecast the magnitude of future floods with perfect accuracy, and the chances are that no one ever will. Such predictions are made, however, with high practical efficiency. Students of hydrology are continually seeking means to increase the accuracy of their forecasts and we find that failures of earth dams due to insufficient spillway capacity are far less frequent than in the past. It is the engineer's responsibility that if he predicts too small a flood, the earth dam may be washed away, and if his prediction is greatly in excess of the largest flood which occurs during the dam's life, he has purchased insurance at extravagant rates.

FATHER MILLET CROSS

America's Smallest National Monument

By Thor Borresen,
Junior Park Research Technician,
Colonial National Historical Park



Where the mighty Niagara River empties into Lake Ontario there is a small, projecting piece of land. Its entire area is approximately 20 acres and yet, to possess 12 of those acres, three nations fought and battled for more than 100 years --- 1687-1814. Inside the present enclosure of Old Fort Niagara, which rests on the piece of land (pictured across these two pages), is a bronze cross 18 feet high with an arm of eight feet. On the arm is the inscription

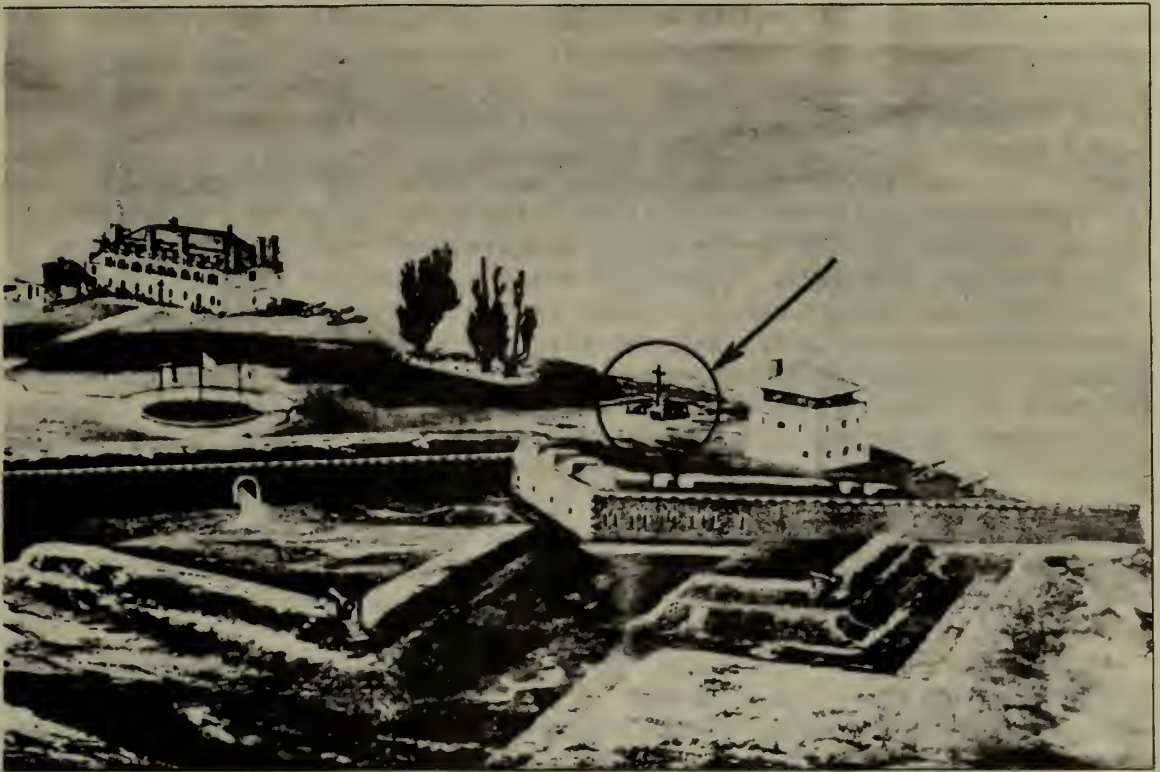
REGN. VINC. IMP. CHRS.

which stands for "Regnat, Vincit, Imperat, Christus." The one-eighth acre on which the cross is located (shown by the arrow and circle in the photograph) constitutes the whole of the national monument to Father Pierre Millet who, on Good Friday in the year 1688, reverently blessed the first wooden cross erected to give thanks for the 12 living and immortalize the 88 dead men who had manned the fort during the preceding winter of starvation. The monument was set aside by presidential proclamation on September 5, 1925, and the bronze cross was presented by the New York State Knights of Columbus in 1926.

The Niagara region is world renowned today for its famous cataract, but its early history is a vigorous, colorful one. The Iroquois name for Niagara was spelled in several different ways --- "Onguiaahra," "On-giara" (1), and "Onygara," the latter the most commonly used by the English. In 1687 "Niagara" began to come into vogue and its popularity was assured shortly after by Corronelli's map (2), although as late as 1724.

(1) Justin Winsor, editor, Narrative and Critical History of America (Boston [copyright, James R. Osgood and Company, 1884]), IV, 247.

(2) Justin Winsor, Cartier to Frontenac; Geographical Discovery in the Interior of North America in its Historical Relations, 1534-1700 (Boston, 1894), 334.



the variation "Jagara" was used on Colden's map (3). The first white man on record who acquired knowledge of the mighty cataract was Samuel Champlain, the French explorer who, in 1603, ascended the St. Lawrence River, then known as the Iroquois or Catarakui (4). It is generally recognized, however, that he never visited Niagara River and that the map for which he gathered information in 1603 and published in France in 1612 (5), showing Lake Ontario and the Niagara River, was drawn on hearsay of the Indians. When he actually visited Lake Ontario in 1615, he did so by traveling the length of the Ottawa to Georgian Bay; at the south end of the bay he made portage over to Lake Simcoe and from there overland until he struck the River Trent, which he followed to its mouth in the Bay of Quinte; then, following that bay to the Upper Gap, he crossed Lake Ontario to what is known today as Mexico Bay (6). The map of his travels in 1615 was not published until 1632, and while it shows a slight change in the river's position from his map of 1603, neither the falls nor the river are placed correctly (7). Up to 1640 only traders and missionaries had seen the river and no attempts to inhabit the area had been made by white men.

(3) Justin Winsor, editor, Narrative and Critical History of America (Boston, 1887), V, 491.

(4) Justin Winsor, Cartier to Frontenac, op. cit., map, "A Plan of the Fort and Bay of Frontenac with adjacent Countries," published in the London Magazine in 1758, 335.

(5) Edward T. Williams, A Short History of Old Fort Niagara (published by Old Fort Niagara Association, Inc., 1929), 11; westerly portion of map reproduced in Winsor's Narrative and Critical History, op. cit., IV, 381.

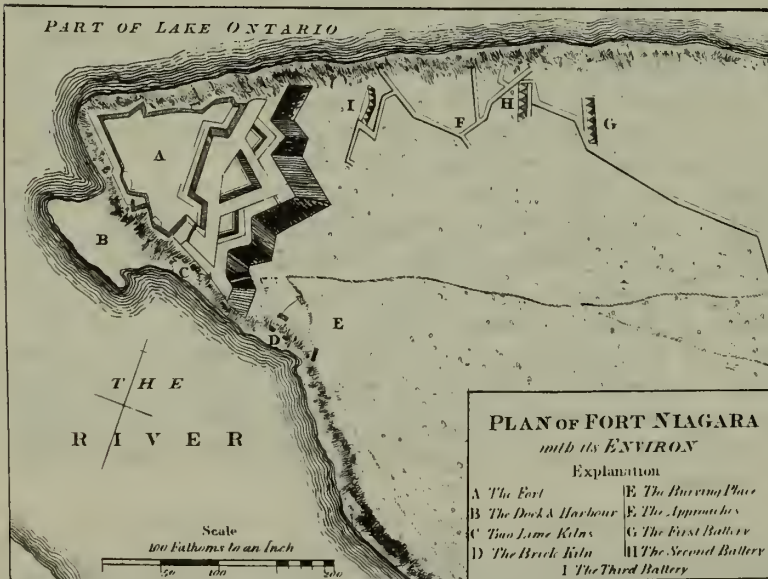
(6) Justin Winsor, editor, Narrative and Critical History of America, op. cit., IV, 125-126; "Champlain's Route, 1615," map on p. 125.

(7) Easterly and westerly portions of Champlain's 1632 map reproduced in Winsor's Narrative and Critical History, op. cit., IV, 386-387.

From the earliest descriptions by both red men and white, the plateau where the present Old Fort Niagara and the cross are situated was devoid of trees. The Indians used it for centuries as a camping and meeting place and during those years all growth undoubtedly was sacrificed for camp fires. A clearer understanding of the important part the region played in the travels of the Indians may be gained by an examination of the map at the bottom of this page (8). The Indians coming from the upper lakes followed the Niagara River from Lake Erie to below what is now Buckhorn Island in the upper Niagara, or the La Salle section of Niagara Falls, New York. (There is today a four-lane highway over this route which has been known for years as the Military Road.) They again placed their canoes in the Niagara slightly below the point where now is situated the Lewiston and Queenston suspension bridge. From there they followed the lower Niagara to its mouth where it enters Lake Ontario, seven miles below Lewiston, New York. At "B" on Captain Pouchot's map (below) is shown a piece of land projecting into the river. It is only from three to five feet above the flow of the stream and was an ideal place for hauling out canoes. The plateau (see A) where the fort stands is 23 to 26 feet above the lake level and afforded an excellent stopover when storms did not permit the frail Indian boats to enter the lake.

The first white man known to begin construction on the site was René Robert Cavelier, more famous as the Sieur de la Salle. On May 12, 1678, he had been granted by the King of France (9) a patent to trade with the Indians. This trade was to be limited, however, to the western and southern tribes that could not reach Montreal and Quebec with their stock of furs. The Ottawa River, having numerous portages, was not a suitable waterway for La Salle's scheme of large-scale trade, but the Niagara was ideal for it permitted large vessels to go all the way from

Fort Frontenac (Kingston, Canada) to Lewiston. At the latter post he placed a magazine, with another at La Salle, New York, in the upper Niagara, where he built the Griffin, the first sailing vessel on Lake Erie, estimated by various historians at 40 to 60 tons. The seven miles between the upper and lower magazines was the only portage from the Great Lakes to Montreal. For this reason the Ni-



(8) Photocopy of map, "Plan of Fort Niagara with its Environ," by Pouchot, 1759; taken from Mémoire upon the Late War in North America, Between the French and English, 1755-1760, by Pouchot (/translated and edited by Franklin B. Hough, Roxbury, Mass., 1886), II, 152.

(9) Justin Winsor, Cartier to Frontenac, op. cit., 256.

agara River has been called the "Gateway to the West" [See map at right] (10).

La Salle realized, as the Indians did, the value of the small harbor at the mouth of the river. To make it secure he constructed a small fort where the present Old Fort Niagara stands. It consisted of two 40-foot-



square redoubts and one magazine, all constructed of logs laid horizontally one on the other, the whole joined by palisades. It was called Fort Conti in honor of Prince Conti, a member of an old Italian family who had recommended Henri Tonty to La Salle. Tonty was one of La Salle's staunchest supporters throughout his entire exploratory career. The fort was completed sometime in the early spring of 1679 but was burned later in the year through the carelessness of a sergeant in charge of the garrison. La Salle did not rebuild the storehouses and stockades, and it was not until the summer of 1687 that the place was fortified again by the French.

The Iroquois had tolerated La Salle, but they were by no means tolerant of the French explorers and traders in general; they did not heed the peace treaty signed by the French and English at Whitehall on November 26, 1686, an agreement which did not establish any defined borders between the two nations' holdings, or prevent either country from warring on any of the native tribes. Denonville, Governor of Canada, claimed as part of French colonial possessions all the lands bordering the Great Lakes and those along the Ohio and Mississippi Rivers as far as Louisiana. The main trade route to these possessions was by way of Lake Ontario and Lake Erie, with the portage at Niagara. Among the most troublesome Indians along the route were the Senecas, the leading tribe of the Iroquois Confederacy, whose territory bordered the lakes of Ontario and Erie.

Denonville decided in 1687 to destroy the Senecas' power and to bring them definitely under French domination. On June 13 he left Montreal with 800 troops. The number had increased to nearly 2,000 by the time he reached Fort Frontenac, where he remained until July 4 when he left with a flotilla of more than 400 canoes for Irondequoit Bay (Baye des Sables) (11). The Indians themselves destroyed their villages at the approach of the French, leaving the enemy the satisfaction of damaging only the gardens and food supplies. They escaped actual annihilation by keeping out of the Frenchmen's way. On July 24 Denonville returned to his place of embarkation, leaving there for Niagara. Determined to re-

(10) Photocopy of map, "Part of Canada and the British Colonies of North America showing Indian Territories," from *The Faithful Mohawks* by John Wolfe Lydekker (New York, 1938), ff. 206.

(11) Pouchot, *op. cit.*, II, 124.

tain a foothold in the Seneca country, he began construction of a fort on the same site on which La Salle's defenses had stood nine years before. According to the journal of De Tregay, lieutenant of the garrison and its surviving commander, Madame Denonville accompanied her husband on the entire journey. If she did so, she was the first white woman whose presence on the Niagara is recorded. One of the officers with Denonville's expedition, Baron de la Hontan, describes the work as a "fort of pales, with four bastions," which "stands on the south side of the Straits of Herrie [Erie] Lake, upon a Hill, at the foot of which that Lake falls into the Lake of Frontenac [Ontario]."

When Denonville left Niagara, he promised supplies would be sent back to the 100-man garrison immediately upon his arrival in Montreal. As the season advanced and no supplies arrived, the garrison was in a dangerous situation. The Indians had not been subdued, and no help could be expected from them. On the other hand, they ambuscaded and tried to destroy the French whenever they ventured out to hunt or gather wood for their fires. Chevalier de Tregay tells in his journal of the futile attempts by the men to take fish from the lake. The garrison was on the verge of starvation when the barque arrived with provisions. It was not until the sails of the ship were disappearing against the horizon on its return to Kingston that the men became aware of the condition of the supplies. They were all spoiled, unfit to eat. De Tregay tells of the ruined provisions and how the garrison faced winter with no food fit for human consumption. With hostile Indians on one side and water on the other, their fort was more a prison than a protection. Scurvy and starvation soon took their toll. De Tregay continues:

The wood choppers, one day, facing a storm, fell in the drifts just outside the gate; none durst go out to them. The second day the wolves found them - and we saw it all (12).

By the end of February 60 had died. One morning De Tregay heard Commander de Troyes mumbling names of loved ones. Soon after he joined the major portion of the garrison. De Tregay himself was on the verge of succumbing to starvation when, suddenly, a huge savage in full war regalia appeared before him. Too weak to offer resistance, he prepared himself for the inevitable, but instead the Indian held before him food, and in the language of the Miamis said "Eat!". So it was that a few friendly Miamis Indians from the Ohio Valley rescued the 12 survivors of the garrison of Fort Denonville which had consisted originally of 100 men.

It was on Good Friday, 1688, that Father Millet, a pioneer missionary who went to Canada in 1667 from his native France, directed the garrison survivors to plant a huge cross in the center of the square forming Fort Denonville to commemorate the men who had died and give thanks for those who had survived. The dimensions of the cross and its inscription were the same as those mentioned above in a description of the permanent bronze substitute erected on the site in 1926.

(12) Williams, op. cit., 24.

Pierre Millet, born in 1635 at Bourges, the approximate geographical center of France, was educated for the church and, when 32 years old, sailed for Canada as one of the early priests whose heroic devotion took Christianity into America's virgin wilderness. "He served about 15 years as a missionary among the Onondaga and Oneida Indians within what is now the State of New York," said the presidential proclamation which established the national monument, "and subsequently became a chaplain in the French colonial forces." He died in Quebec.

During the summer of 1688 another peace treaty was signed between England and France, as well as an agreement between the Iroquois and the French to stop further violence on the frontier. In this agreement the French consented to the withdrawal of their forces from the Niagara region and to the destruction of the fort except for the cabins and quarters, which were to be left standing for the use of the Indians. The itemized list of buildings left by the French helps to picture what this ancient fort looked like:

"ITEM, A cabin in which the Commandant lodged, containing a good chimney, a door and two windows furnished with their hinges, fastenings and locks, which cabin is covered with forty-four deal boards, and about six other boards arranged inside into a sort of bedstead.

"ITEM, In the immediate vicinity of said cabin is another cabin with two rooms having each its chimney; ceiled with boards, and in each a little window and three bedsteads, the door furnished with its hinges and fastenings; the said cabin is covered with fifty deal boards and there are sixty like boards on each side.

"ITEM, Right in front is Rev. Father Millett's cabin furnished with its chimney, windows and sashes; with shelves, a bedstead and four boards arranged inside, with the door furnished with its fastenings and hinges, the which is of twenty-four boards.

"ITEM, Another cabin opposite the cross, in which there is a chimney, board ceiling, three bedsteads, covered with forty-two boards, with three like boards on one side of said cabin, there is a window with its sash and a door furnished with its hinges and fastenings.

"ITEM, Another cabin with a chimney, a small window with a sash and door; covered with thirty deal boards; there are three bedsteads inside.

"ITEM, A bakehouse furnished with its oven and chimney partly covered with boards and the remainder with hurdles and clay; also an apartment at the end of said bakery containing two chimneys; there are in said bakery a window and door furnished with its hinges and fastenings.

"ITEM, Another large and extensive frame building having a double door with nails, hinges and fastenings, with three small windows; the said apartment is without a chimney; 'tis floored with twelve plank (Madriers) and about twelve boards are arranged inside; without, 'tis clap-boarded with eighty-two plank.

"ITEM, A large storehouse covered with one hundred and thirty boards, surrounded by pillars eight feet high, in which there are

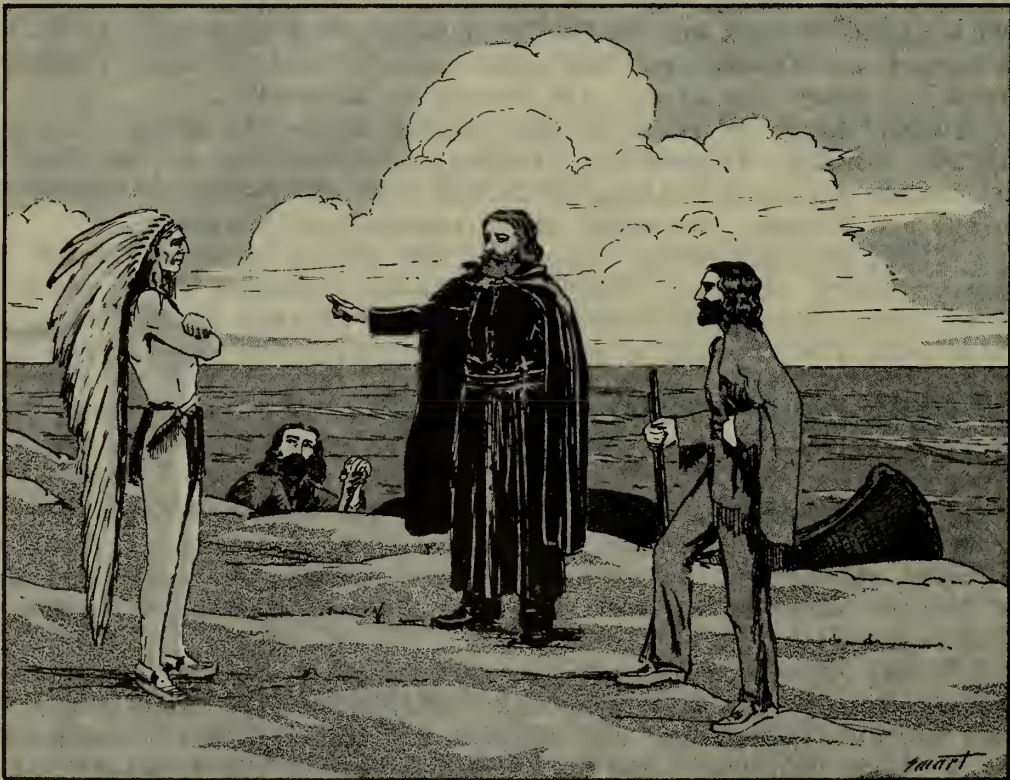
many pieces of wood serving as small joists, and partly floored with several unequal plank. There is a window and a sliding sash.

"ITEM, Above the scarp of the ditch a well with its cover."(13).

The story of the present Old Fort Niagara does not begin until about 1725, and is one to be told another time. The writer of this article was a member of the staff during the restoration of Old Fort Niagara, from 1926 to 1934, and had charge of several minor archeological excavations. During this work skeletal remains were encountered. Some of the burials were only 11 inches below the surface and changes in the road system necessitated the removal of a few of them. What portion of these represents the period of starvation, no one has determined. During the French and English war, when General Pridaux laid siege to Fort Niagara in July, 1759, many of the French of the garrison were killed and buried within these walls; and during the War of 1812, several casualties occurred, their interment most likely taking place on the spot.

During the summer of 1934, a large monument was erected within the grounds to commemorate the Rush-Bagot Treaty of 1817 between Canada and the United States. A suitable niche was constructed in the center of this memorial and all the remains, sealed in an aluminum container, were placed there, the whole marked with an inscribed stone.

(13) Ibid., 25-26.



THE PETERSBURG CRATER - THEN AND NOW

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

July 30 is the seventy-fifth anniversary of the Battle of the Crater at Petersburg. The once raw, gaping hole which swallowed Grant's hopes of ending the war in Virginia in the summer of 1864, is now an innocent-appearing depression, covered with sod and pine-needles, not at all striking to those who read the dimensions of present-day shell-holes. A steam shovel could produce a cavity of like dimensions in a few hours, but such an observation, while all very true and valuable as a means of comparison between the technical resources of today and yesterday, shows a certain lack of imagination. No doubt an acetylene torch would have been a formidable weapon against armor at Agincourt, yet no one bothers to point that out in the study of English history. By the same token, a single shot from a good-sized modern gun would no doubt have merged the Monitor and the Virginia in one short-lived splash. Nevertheless, the combat of those vessels opened a naval era, and indirectly affected the pocketbook of every taxpayer in the world today, according to his share of the upkeep of steel navies.

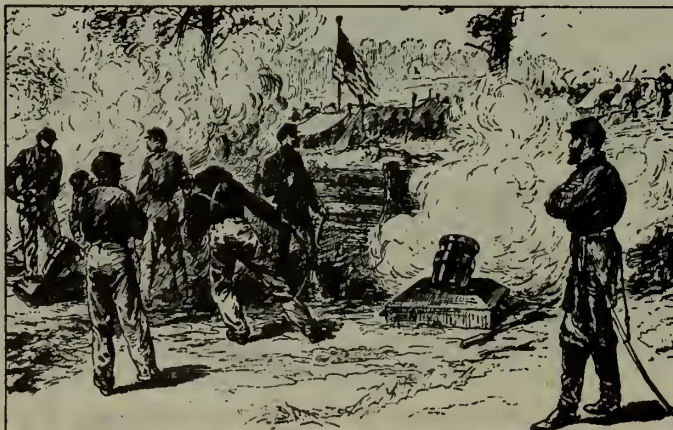
In the same way the Battle of the Crater and the Petersburg campaign, in which it was an important chapter, go on affecting us today, not simply in the political and economic results of the long-ago sectional conflict, but also because in the history of that war all the principles and practices of twentieth century warfare are set forth in text-book form. It is true that war today would be far more specialized, fought with more efficient and complicated weapons than were available to Lee and Grant. Yet, so long as it is admitted that the foot-soldier is the final and indispensable basis for all the interlocking technical structure of a modern army, so long will the American Civil War be studied, not only by military men but by everyone who wants to learn, as nearly at first hand as possible, what would happen if this country were involved in war.

Beyond the imperative need for such knowledge, the War Between the States offers also a fascinating study in the behavior of Americans under extraordinary conditions. The soldiers of 1861 were nearly all citizens in uniform, just as were our soldiers of 1917, and both reacted to stress in much the same way. One important difference in the two situations, from the present-day point of view, is that the trenches of 1864, as in the case of the Crater battlefield, are to be found here in eastern America, so that it is possible in a comparatively small territory, to trace the footsteps, almost to follow the pick marks, of the men who left farm or factory in '61 to study for four years the curriculum of an absorbing if not exactly cultural institution.

If we trace their footsteps with understanding, it cannot be denied that our forefathers were apt pupils. In fact, the American soldier of 1865 was not only the best-trained warrior of his own time -- he knew a

surprising number of things which had to be learned all over again in 1914 at considerable cost. In the same way, the nation at large knew more about the expense and the psychology of war than it has ever had to learn again. All these facts are written permanently on the face of Virginia, if we care to look with a little imagination at the battlegrounds. In doing so, it is well to remember that there is one important difference between an entrenchment and a drainage ditch: the latter is planned and understood with reference to natural laws, while the trench is the product and focus of a tremendous number of human causes. One man, if you shoot at him from cover, and if he does not wish to leave that neighborhood, will dig a hole where he is. The size and shape of the hole is some indication of his training, energy and future intent. When we multiply that hole by 100,000 (the number of men Grant had) and thus arrive at the trench system of an army, we have also to multiply the factors which produced it, and to consider the motives and actions of the pick and shovel men and each of his superiors, as well as of the government and people behind them. A large part of the story of a war, from enlistment office to firing line, may be read in the location of one trench.

The earthwork as history has the advantage that it is difficult to move or change, whereas the story of a battle may shift appreciably with the character of each historian. Certain of these considerations apply with particular force to the Crater battlefield, for although three-quarters of a century has passed since the explosion that destroyed the Confederate battery, the location is marked more impressively and appropriately than any memorial stone could do it. We can follow the tunneling of the Federals, now marked by cave-ins on the surface of what was once No Man's Land, over to the Crater itself, still a hole of notable proportions, dominated by the massive earthwork which the Confederates built behind it after their successful defense. Thus the story is told, not completely, it must be admitted, but very definitely by the earth itself. The Petersburg National Military Park, of which the Crater field is a part, attempts to interpret its particular segment of the American epic by every means available -- but the most impressive narrative is still the product of the Blue and the Gray soldier-excavators.



THE WINNERS

Shown at the right is the No. 1 prize winner submitted by R. Patterson, of Beach Pond Recreational Demonstration Area, Rhode Island, as his entry in the safety poster competition sponsored by the Richmond office for Civilian Conservation Corps enrollees assigned to camps of Region One. Second prize went to Bob Donovan, of Chenango Valley State Park, New York, for the poster pictured below. Howard R. Holt, of Moose Brook State Park, New Hampshire, won third prize. Honorable mention was accorded the entries of Malcolm B. Thompson, Camden Hills Recreational Demonstration Area, Maine; Robert S. Cutright, Sand Run Metropolitan Reservation, Ohio, and Edward I. Blanchette, Warwick State Forest, Massachusetts.



THE "WISE GUY" DISREGARDS GOGGLES..
THE "SMART BOY" USES THEM AT WORK.



THIS IS THE SMART BOY. HE IS WEARING GOGGLES OVER HIS EYES, NOT AROUND HIS NECK, THUS DECREASING THE DANGER OF CHIPPED ROCK.



THIS IS WHAT HAPPENED TO THE WISE GUY. BLINDNESS AND BAD EYE INJURIES CAN BE CAUSED BY CHIPPED ROCK STRIKING UNPROTECTED EYES.

PROTECT YOUR
EYES .. WEAR GOGGLES



THE REGIONAL REVIEW

ISSUED MONTHLY
BY THE
REGION ONE OFFICE
RICHMOND, VIRGINIA

Volume III July, 1939 Number 1

BIRTHDAY

The minutissimic editorial and mechanical staff of The Regional Review sat down together this month at a small table to decide whether to eat its cake or just have it. It was a dainty papier mâché affair surmounted by a lonely but somewhat substantial multilithic candle. Immature yet nonetheless unashamed members of America's great Fourth Estate, the staff paused in provident meditation and determined at last to save the cake for those lean days when, sliced with a razor and doled discreetly, it might serve as a welcome safeguard against the stalking heralds of famine.

Despite that hoarding of its provender, however, The Review decided to leave its first birthday candle burning with a hope that, notwithstanding the feeble wattage, it might light our halting steps along the shadowy byways of another editorial year. Whether derived from some horrendous glandular imbalance or from the stream-lined pace of once-a-month performance, The Review does not know; but it feels unquestionably the weight of its one year and can only hope that it wears with jaunty grace and moderate good humor the graying mantle of age.

It now enters its second year with a deep-seated desire to be increasingly serviceable to its readers. It wishes to remind them, too, that they most of all can help The Review along its modest way by vol-

unteering suggestions, criticisms and publishable materials. The general character of the articles which are reproduced is well known now to all who take interest in our monthly journal, and it is emphasized here that contributions always are welcome. A few of them received from time to time do not appear to embody information which, in the opinion of The Review, would attract interest throughout the entire region, but others have proved to be noteworthy additions to the permanent record in widely separated fields. It is hoped that our volunteer writers will walk hand-in-hand with us through the pages of new numbers and new volumes.

WELL-WISHERS

A good many kindly birthday greetings have come to The Review during the month, most of them from non-employees who, upon reading the notice contained in the last issue, requested that their names be retained on the mailing list. Like all who are young enough to welcome anniversary congratulations, we are grateful for these evidences of friendly interest in our unpretentious endeavors. Roundly appreciated among the exhibits which this bulletin will keep under glass in its own little museum of forgivable vanities is the graciously phrased encouragement of the two-sentence letter received from Dr. Douglas Southall Freeman, editor of The Richmond News Leader and author of the monumental biography of Robert E. Lee. Said Dr. Freeman:

"Observing the 'mail notice' on page 10 of your June issue, may I respectfully ask that the undersigned be kept on the mailing list for your admirable publication. I do not know a better document of its kind and I congratulate you on it."

PUBLICATIONS AND REPORTS

SOUTHWESTERN REGION ISSUES NEW BULLETIN

Vol. I, No. 1, of Region III Quarterly made its appearance this month as a 25-page journal designed to disseminate information concerning National Park Service activities in Arizona, Arkansas, New Mexico, Oklahoma and Texas and the southern portions of Colorado, Nevada and Utah---the territory administered through the Santa Fe field headquarters. The inaugural issue is an expertly edited, well balanced collection of materials dealing with some of the geological, historical, archeological, biological, forestry and engineering aspects of the region.

An introductory notice by Regional Director Hillory A. Tolson explains that "articles will be written in non-technical phraseology with a view to making them interesting and instructive. . . The articles in this first issue have been written by Region III Office personnel to indicate the type and quality of material to be used. The Quarterly can not be published regularly, however, without field cooperation and assistance. It can not succeed without contributions from superintendents, rangers, inspectors, and others. . . It is proposed to include, from time to time, pertinent articles written by persons outside of the Service. Such articles will give an outside viewpoint which should be helpful in considering Service problems."

Associate Recreational Planner Leo A. McClatchy is editor of the new bulletin and Architect Cecil J. Doty is art editor. Contributors to the first issue are Geologist Charles N. Gould, "What Made Grand Canyon?"; Associate Engineer James B. Hamilton, "Threatening Rock"; Wildlife Technician W. B. McDougall, "Modern Man and the Primitive Era"; Archeologist Erik K. Reed, "The Meaning of Archeology"; Associate Forester W. Ward Yeager, "Pinon-Juniper Forests", and Aubrey Neasham, Regional Supervisor of Historic Sites, "The Cavalcade of the Southwest".

SERVICE INFORMED OF NEW PERUVIAN BIRD STUDIES

Victor H. Cahalane, Acting Chief of the Service's Wildlife Division, has received a personal communication from William Vogt, former editor of Bird-Lore, which suggests some of the interesting ornithological returns that may result from his commission by the Peruvian Guano Commission to conduct a study of the so-called guano birds of the coastal islands of Peru as a feature of a program designed to conserve a resource of worldwide economic importance.

"It is a beautiful, fascinating and exciting part of the world," wrote Mr. Vogt. "The work, which is turning out to be a combination of behavior studies in rather primitive birds -- with ecological studies -- in an environment of almost arctic simplicity, seems to be shaping up well. . . I am pretty sure I have hit upon a movable 'limiting factor'. These birds are as sensitive to microscopic changes in the climate as some people are to eggs. . . There have been a number of banded Frank-

lin's gulls picked up since I have been here, banded by me, and they get quite a play in the newspapers. The bird is so ubiquitous and so abundant along this coast, you wonder where it breeds. I have been in the middle West in season but I have never seen anything to compare with the flocks here. They work the haciendas just as they do the grain fields in the Dakotas.

"Aside from the Franklin's gulls, I have seen few North American birds. Shore birds, save surf birds and turnstones, seem not to reach the islands very often. There seems to be little killing of shore birds here though there is some. But the country is sparsely settled and the natives too poor to buy guns."

NEW WILDLIFE PUBLICATIONS TO BE ISSUED

Delivery to the printer of materials for five (possibly six) new publications is recommended as a part of the Wildlife Division's activities during the current fiscal year. The titles include The Coyote in Yellowstone, by Adolph Murie, intended as the fourth issue in the fauna series of the Service; The Wildlife Portfolio, by Joseph S. Dixon, which has been in preparation for several years; Mammals and Birds of Sequoia National Park, by the latter author; a bulletin covering Dr. Murie's investigations of wolves, bighorn and caribou in Mount McKinley National Park, and a publication by A. E. Borell on mammals of the proposed Big Bend National Park. Also on the recommended list is a bulletin on animal life of Great Smoky Mountains National Park, material for which is expected to be assembled late in the year by Park Naturalist Arthur Stupka and others.

TWO FULL-LENGTH BOOKS DESCRIBE NATIONAL PARKS

The Romance of the National Parks, by Harlean James, executive secretary of the American Planning and Civic Association and the National Conference on State Parks, and National Parks of the Northwest, by Martelle (Mrs. Earl A.) Trager, wife of the chief of the Service's Naturalist Division, both infect home bodies with the tantalizing virus of travel.

Miss James's book, illustrated by maps and 123 excellent photographs, emphasizes the great parks of the west but there also is a section concerning the national areas east of the Mississippi River. "Read it and drive!" said a reviewer of The New York Herald Tribune. "You can't look at these photographs, or read this story, without wanting to be off. . ." The 240-page volume (Macmillan) is on sale at \$3.

Mrs. Trager's book (Dodd, Mead and Company) describes the pleasures of tours taken by a family through Yellowstone, Grand Teton, Glacier and other western national parks. There are seven folding maps and an appendix which offers, in guide book fashion, specific information needed by the traveler. A second volume, concerning other western parks, is contemplated by the author.

BIBLIOGRAPHICAL NOTES

- Bent, Arthur E.:
1939 "Mount Washington Observatory", New England Naturalist, Vol. 1, No. 3, June, pp. 6-11, Illustrated.
- Blake, Charles H.:
1939 "The Flight of Humming Birds", New England Naturalist, Vol. 1, No. 3, June, pp. 1-5, Photographs by H. E. Edgerton.
- Crowe, Hilton F.:
1939 Great Men and Great Events in the History of St. Augustine, No. 13: The Last Years of Spanish Occupation, 8 pp., bibliography.
- Darling, J. N.:
1939 "Shadows Along the Santee", Conservation, Vol. 5, No. 3, pp. 6-7.
- Danmarks Naturfrednings-
forenings:
1939 Dansk Naturfredning, edited by Erick Struckmann, Copenhagen. 176 pp., 101 photographs.
- James, Harlean:
1939 Romance of the National Parks. The Macmillan Company, New York. 240 pp., 123 photographs.
- Lewis, Ralph H.:
1939 Preliminary Museum Development Plan for Manassas. June 27, 27 pp.
- Linder, David H.:
1939 "A New Species of Elaphomyces from the Great Smoky Mountains National Park," Journal of the Elisha Mitchell Scientific Society, Vol. 55, No. 1, June.
- Mains, E. B.:
1939 "Cordyceps from the Mountains of North Carolina and Tennessee," Journal of the Elisha Mitchell Scientific Society, Vol. 55, No. 1, June.
- McClatchy, Leo A.:
1939 "'The Boss' at Casa Grande Ruins", The Desert Magazine, Vol. II, No. 9, July, pp. 18-20. Illustrated.
- Newton, Frances M.:
1939 "Letchworth Park", Museum Service, Vol. 12, No. 6, p. 125.
- Reed, Erik R.:
1939 "The Meaning of Archeology", Region III, Quarterly, Vol. 1, No. 1, July, pp. 18-20.
- Tennessee Valley Authority:
1939 Forestry and Wildlife Activities. Mimeographed memorandum. 9 pp., June 15.
- Voorhis, Manning C.:
1939 Sam Houston Birthplace Historic Site Survey Report. June 28, 15 pp., bibliography, maps, photographs.

KENNESAW MOUNTAIN AREA DEDICATED

Dual exercises which commemorated the 75th Anniversary of the battle of Kennesaw Mountain, near Marietta, Georgia, and dedicated formally the National Battlefield Park as a new unit of the Service system, were held June 25 in the presence of distinguished visitors. The principal address was made by Ralph McGill, executive editor of The Atlanta Constitution.

Dedication of the park followed acquisition of all land required to comprise minimum boundaries. Owners and tenants already have vacated the property and all save one undesirable structure has been razed. With preliminary operations thus completed, the major development program now will be undertaken. Bolling C. Yates is the superintendent.

OCMULGEE TO BE HOST TO ARCHEOLOGISTS

About 40 members of the Southeastern Archeological Conference, at a meeting held in Birmingham late in June, voted to gather for its next session, sometime between November 1 and December 15, at Ocmulgee National Monument, notable prehistoric area at Macon, Georgia. An outstanding result of the recent meeting is a plan to correlate the relative chronological relationships of the various culture sequences already determined for restricted areas of the southeast. A tentative correlation sheet will be issued soon.

Field Curator John C. Ewers, the acting Superintendent of Ocmulgee, has reported meanwhile that 48,900 sherds and artifacts from 10 monument sites were catalogued during the fiscal year just ended. "This virtually completed the numbering of the nearly one million sherds in the monument collections," he pointed out. "With this work completed it is expected to begin large scale analysis in the near future."

FORT McHENRY AGAIN BOMBARDED

While the cruiser Vincennes looked on, the destroyers Leahy, Schenck, and Truxton fired a spectacular barrage of six-foot rockets on old Fort McHenry on the night of June 25 while that national park was being "defended" by the 110th U. S. Field Artillery. The informal celebration, sponsored by the Maryland Yacht Club, reached a climax with the raising of a spot-lighted flag while a band played The Star Spangled Banner, the song composed 125 years ago at nearly Old Roads Bay by Francis Scott Key.

Meanwhile, Congress had not taken final action on a proposal to change the name of the famous Baltimore area from Fort McHenry National Military Park to Fort McHenry National Monument and Historic Shrine, a redesignation requested as one feature in the standardization of the Service's classification nomenclature.

THE CONTRIBUTORS

STANLEY W. ABBOTT, a 1929 graduate of Cornell, was for four years Assistant Landscape Architect on the staff of the Westchester County (New York) Park Commission following a briefer period of service with the Finger Lakes State Parks Commission in the same state. His first employment with the Service came in 1934 with the inception of the Blue Ridge Parkway project, of which he now is Acting Superintendent.

TYLER B. KIENER, a civil engineering graduate of the University of Virginia, had engaged in surveying and construction work in a half-dozen states before he entered the Service in 1933. He withdrew in 1935 to become Assistant Director of Virginia State Parks, returning to the Region One office a year later as Associate Engineer. He is a specialist in designing impounding dams.

Biographical notes on CARL P. RUSSELL and THOR BORRESEN already have appeared in this section.

