my experiments I suspected that there might be two kinds of H_3; this surmise is confirmed by the fact that many chemists who have experimented on triatomic hydrogen have come to the conclusion that it has a life of only a minute or so, and can only exist when charged with electricity. So far as I know, they all used hydrogen prepared in the usual way and not that obtained by bombarding solids; there is not the slightest doubt that the H_3 obtained in the latter way is stable and can exist uncharged.

I think the effect of the solid is due to its adsorbing a mixture of gases including H_2 and H_3, and that when it is bombarded, relatively more H_3 than H_2 comes off from the adsorbed layers. Thus the mixture that comes out is richer in H_3 than the mixture in the gas adsorbed by the solid.

ROCK FORMATIONS OF DEATH VALLEY, CALIFORNIA[1]

By Dr. L. F. NOBLE
U. S. GEOLOGICAL SURVEY

PRELIMINARY STATEMENT

DURING the past two years the Geological Survey has been making a study of the geology of Death Valley. The area under investigation includes all Death Valley south of parallel 117° 30′ (which crosses Death Valley four miles north of the Furnace Creek Ranch) and enough of the neighboring territory to provide evidence necessary for an understanding of the general stratigraphic and structural relations of the region. The area is included in the northern half of the Avawatz Mountains topographic map and the southern half of the Furnace Creek topographic map and adjoins on the south the area described and mapped by Ball,[2] whose work covered all the region north of parallel 117° 30′. The investigation, which is designed to attain the scope of a fairly thorough geologic reconnaissance, is being carried out by the writer. Two winter seasons of field work have been completed with the aid of a mosaic of air photographs taken specially for the project. During a part of the first season the writer was assisted by C. L. Gazin.

At the time when the investigation was begun little was definitely known concerning the age, character and distribution of the rocks in the area and almost nothing concerning the structure. The first step in the investigation therefore was to determine the age and sequence of the rocks, without which knowledge it is impossible to decipher the structure. The field work thus far has been devoted to obtaining this fundamental knowledge. It remains to work out the structure and to supplement the stratigraphic reconnaissance by a more detailed study of some of the rock formations.

In the statement which follows no attempt is made to describe the rocks systematically or in detail. For example, the term granite is used for rocks that range in composition from granite to quartz diorite, and the term limestone is used for both limestone and dolomite. Thicknesses given for formations are only rough estimates, because few detailed sections have been measured. Lists of fossils found in the Paleozoic strata and the reports on these fossils made by Survey paleontologists will be reserved for another paper.

[1] Published by permission of the Director, U. S. Geological Survey.

[2] S. H. Ball, "A Geologic Reconnaissance in Southwestern Nevada and Eastern California," *Bull. U. S. Geol. Surv.*, 308, 1907.

AGE AND CHARACTER OF THE ROCKS

The Death Valley area contains rocks of all the great geologic time divisions—Archean, Algonkian, Paleozoic, Mesozoic, Tertiary and Quaternary—whose aggregate thickness certainly exceeds 30,000 feet for the stratified rocks alone, but earth movements in the area have been so profound and so recurrent that the rock masses form a complex mosaic of crustal blocks isolated one from another by folding, faulting, tilting, igneous intrusion, erosion and burial under Quaternary alluvium. Consequently, the sequence is not complete at any one locality and can be pieced together only by examining many different parts of the area.

PRE-CAMBRIAN ROCKS

Archean rocks.—The rocks of the oldest system, the Archean, are the basal rocks of the region. They are chiefly gneisses and mica schists but include bodies of quartzite and limestone. A common type of gneiss is remarkably coarse and granitic and contains conspicuous large crystals of pink feldspar. Another common type is a dark gray dioritic gneiss or metadiorite. All the Archean rocks have been recrystallized by heat and pressure and contain no recognizable traces of life. In origin they are in part igneous and in part sedimentary. As a whole they greatly resemble the Archean rocks that make the Granite Gorge in the bottom of the Grand Canyon. Like the Grand Canyon Archean rocks they are separated from an

overlying series of pre-Cambrian strata by a profound unconformity. This unconformity is well exposed at several places in the Death Valley area.

Algonkian rocks.—The pre-Cambrian strata overlying the Archean are a series of limestones, shales, sandstones and conglomerates which at many places contain bodies of a dark basic igneous rock that was injected into them as sills and dikes in pre-Cambrian time. The thickness of the series may be as much as 7,000 feet, although no complete section is exposed at any one locality. As pieced together from a study of many different localities the succession from the base upward is broadly as follows:

GENERALIZED SECTION OF ALGONKIAN, DEATH VALLEY REGION

Unconformity at top	Feet
4. Sandstone, conglomerate, and shale in alternating beds	1,500
3. Limestone, gray algal, locally as much as	1,000
2. Limestone, varicolored shale, and sandstone in alternating beds; irregularly intruded by basic igneous rocks; estimated thickness	4,000
1. Sandstone and conglomerate, minimum thickness	500
Unconformity at base.	7,000

The only fossils found in the strata are algae which, in some limestone beds, are so abundant as to constitute the entire rock. The series is separated from the underlying Archean rocks by the unconformity just mentioned and from overlying Paleozoic rocks of Lower Cambrian age by an angular unconformity that is well exposed at many places and is as profound as the similar unconformity in the Grand Canyon that separates the Algonkian Grand Canyon series from the overlying Paleozoic, for at one place and another in the Death Valley area it bevels the upturned edges of all the units in the pre-Cambrian sedimentary series and the Archean rocks as well.

Comparison with Algonkian in Grand Canyon.—The presence in the Death Valley region of the pre-Cambrian strata just described is of considerable interest. In the opinion of the writer the Algonkian rocks of Death Valley are as a whole roughly equivalent to the Algonkian Grand Canyon series (Unkar and Chuar groups), which he has previously studied.[3] Not only do the Death Valley Algonkian strata occupy a similar stratigraphic position between rocks of Archean and Cambrian age, but they strikingly resemble the Grand Canyon Algonkian strata in lithology and were obviously deposited under similar conditions, containing, as they do, great thicknesses of similar sandstone beds, similar beds of bright red shale exhibiting sun cracks and ripple marks, similar algal limestones and masses of similar basic igneous rock. As contrasted with the Grand Canyon section, the Death Valley section contains more limestone, more conglomerate and more and thicker sills of basic igneous rock. The Death Valley Algonkian rocks, moreover, are much more disturbed and altered than the equivalent Grand Canyon rocks. At most places shale is altered to slate, jasper or schist; sandstone to quartzite; and limestone to marble. Most of the basic igneous rocks are altered to greenstone. Deposits of talc are associated with the contacts of greenstone and limestone in the Death Valley Algonkian in much the same manner that deposits of serpentine asbestos are associated with similar contacts in the Grand Canyon.

Other comparable Algonkian occurrences.—The most complete section of the Algonkian strata in the region here discussed is exposed in the Kingston Range just east of the Death Valley area. This section, which has been studied by Hewett[4] and will be described by him in his forthcoming report on the geology of the Ivanpah quadrangle, undoubtedly constitutes the type section for the Death Valley region.

In the opinion of the writer the rocks that constitute the Telescope group of the Panamint Range described by Murphy[5] may prove to be correlatives of the Algonkian rocks just described. If this opinion is correct, the underlying Panamint metamorphic complex described by Murphy is the Archean of the Death Valley area.

It is interesting to note that the Paleozoic beds which unconformably overlie the Death Valley Algonkian strata are Lower Cambrian, whereas those which similarly overlie the Grand Canyon Algonkian strata are Upper Cambrian. This fact, assuming that the Death Valley and Grand Canyon Algonkian beds are correlatives, would appear to afford conclusive proof of the pre-Cambrian age of the Grand Canyon beds, about whose pre-Cambrian age some doubt has been entertained, despite the magnitude of the erosion interval above them.

PALEOZOIC ROCKS

The Paleozoic rocks include strata of Lower Cambrian, Ordovician, Devonian and Mississippian age that have been dated definitely by finding fossils in them; also strata containing fossils that are probably

[3] L. F. Noble, "The Shinumo Quadrangle, Grand Canyon District, Ariz.," *Bull. U. S. Geol. Surv.*, 549, pp. 37–60, 1914.

[4] D. F. Hewett, personal communication.

[5] F. M. Murphy, "Geology of a Part of the Panamint Range, Calif.," *Rep. 28, California State Mineralogist*, July–October, 1932, p. 336.

early Pennsylvanian. Beds are present in the section that there is reason to believe are of Middle Cambrian, Upper Cambrian and Silurian age, although their ages have not yet been established definitely by finding fossils. No beds of Permian age have been identified. Apparently all the Paleozoic strata were deposited beneath the sea. The most abundant fossils in the Lower Cambrian beds are trilobites, in the Ordovician beds gastropods, in the Devonian corals, and in the Mississippian crinoids. Algae are abundant in many Cambrian beds.

The aggregate thickness of the Paleozoic strata is as much as 15,000 feet and may be much greater. At least a third of the section is Lower Cambrian. The basal unit of the section is a massive bed of limestone which weathers buff and which at some places is at least 1,000 feet thick. Above the limestone are at least 5,000 feet of beds which are chiefly sandstone (quartzite) but which include conglomerate, shale and limestone. Lower Cambrian fossils were found in limestone beds interstratified with shale near the top of this unit. Then follow 5,000 feet or more of very massive beds of limestone characterized in the upper part by broad alternating bands of light and dark gray that are conspicuous from great distances. Much of the limestone is a dark bluish-gray rock with a peculiar mottled appearance that is commonly associated with Cambrian limestones in the region. Beds of greenish and reddish shale that may be Middle or Upper Cambrian are present at the base of the limestone. Lower Ordovician (Pogonip) fossils were found in the banded beds near the top of the limestone. The unit as a whole is believed to be part Ordovician in age and part Cambrian, but the line of separation between the Cambrian and Ordovician beds has not been established nor is it known what divisions of the Cambrian the lower part of the unit represents, although there is reason to believe that much of it is Upper Cambrian. It is certain that the unit is equivalent in part at least to the lithologically similar Goodsprings dolomite of the region just east of the Death Valley area described by Hewett,[6] although the unit is apparently much thicker than the Goodsprings dolomite. Above the unit just described follow several hundred feet of quartzite that may represent the Middle Ordovician Eureka quartzite; then follow several thousand feet of light and dark limestones in which the writer has found Devonian fossils a few hundred feet above the base and Mississippian fossils a few hundred feet below the top. Fossils that are probably of early Pennsylvanian age have been found by Professor J. W. Wolff and Mr. J. H. Maxson in limestone beds at the head of Warm Springs Canyon in the Avawatz Mountains quadrangle, but the relation of these beds to the other Paleozoic rocks of the region has not yet been studied by the writer.

The thick bed of limestone at the base of the Lower Cambrian is for stratigraphic purposes one of the most important rock units in the area. The pale buff color and massive character of the bed render it conspicuous from great distances, so that it serves as a marker to guide the observer to the base of the Paleozoic and the unconformity between the Paleozoic and the underlying Archean and Algonkian. The bed has not been found north of Furnace Creek, but it crops out at many places in the southern part of the Death Valley area. Numerous isolated patches of it are found lying upon the Archean and Algonkian rocks in the most unexpected places. At most places the limestone is intensely shattered and at some places a bed of conglomerate or breccia lies at the base of the limestone. The bed just described has been studied by Hewett in the northwestern quarter of the Ivanpah quadrangle adjoining the Death Valley area. He states[7] that the limestone is a dolomite; that the type locality is at the Silver Rule mine on the northwest slope of the Kingston Range where the bed is 2,000 feet thick, thinning rapidly eastward and southward; that it lies unconformably upon Archean and Algonkian rocks, as in the Death Valley area; and that no such unit is known elsewhere in the region to the south or east.

MESOZOIC ROCKS

So far as known the Mesozoic era is represented only by masses of granite which in places has been injected into rocks of all the older systems. The apparent absence of Permian and Mesozoic sedimentary rocks in the Death Valley area is puzzling, because thousands of feet of them are present in Spring Mountain[8] scarcely 30 miles east of the area, where they include the Permian Supai formation and Kaibab limestone, the Triassic Moenkopi formation, Shinarump conglomerate and Chinle formation, and the Jurassic (?) Aztec sandstone, and extend with undiminished thickness far eastward; and because thousands of feet of Mesozoic beds are present in the Inyo Mountains[9] scarcely 30 miles west of the area. The beds in the Inyo Mountains are of Triassic age but are of a type wholly different from the Triassic

[6] D. F. Hewett, "Geology and Ore Deposits of the Goodsprings Quadrangle, Nev.," *Prof. Pap. U. S. Geol. Surv.*, 162, pp. 11–13, 1931.

[7] D. F. Hewett, personal communication.

[8] C. R. Longwell, "Structural Studies in Southern Nevada and Western Arizona," *Bull. Geol. Soc. Amer.*, 37: 4, 557–558, December 30, 1926; D. F. Hewett, *op. cit.*, pp. 9, 10.

[9] Adolph Knopf, "A Geologic Reconnaissance of the Inyo Range and the Eastern Slope of the Southern Sierra Nevada, Calif.," *Prof. Pap. U. S. Geol. Surv.*, 110, pp. 47, 48, 1918.

rocks in Spring Mountain. It is possible that the structural study of the Death Valley area will suggest the reason for the absence of the Permian and Mesozoic rocks, or it is equally possible that some of these rocks have escaped recognition and will be found when the writer has covered the area more thoroughly.

TERTIARY ROCKS

The Tertiary rocks lie unconformably upon the upturned and eroded edges of all the older rock systems and, next to the Quaternary deposits, are the least disturbed and altered rocks in the area, but even they have been profoundly disturbed, as one may see in descending the long valley of Furnace Creek, which is cut in them. They comprise at least two unconformable series much alike in general character, which have not yet been satisfactorily separated. The aggregate thickness of the Tertiary strata is difficult to estimate until they have been studied in more detail, but it is believed to be at least 10,000 feet. The Tertiary rocks include sandstone, conglomerate, shale, limestone and a great amount of volcanic material—part of which was ejected as lava, breccia and ash, and part of which was injected into the adjacent rocks as dikes and irregular masses. Volcanic activity appears to have prevailed during all the time that the Tertiary deposits were being laid down. Much of the older volcanic rock is rhyolite and andesite; much of the younger volcanic rock basalt. None of the Tertiary rocks were laid down beneath the sea. The shales were deposited as mud and clay in dry lakes like those which exist at present; the sandstones and conglomerates were deposited as sand and gravel on alluvial slopes like those which now cover large parts of the region.

One interesting feature of the Tertiary rocks is the extreme coarseness of some conglomerates and breccias, some of which contain rock fragments 100 feet or more in diameter. Certain breccias of granitic material in the Tertiary series are so coarse and so angular and contain so little matrix that at first sight they resemble granite in place. In origin they appear to be talus deposits laid down against fresh slopes or cliffs, a relation which suggests that the Tertiary deposits were laid down in basins bordered by steep fault-line scarps like the scarp which now borders Death Valley at Dante's View. In other words, the Tertiary basins were structurally similar to basins like the present Death Valley trough. Another interesting feature of some of the Tertiary beds is their astonishing variability in thickness within short distances. In Copper Canyon, for example, a bed of gypsiferous clay lying in a coarse breccia-conglomerate was observed to expand from zero to a thickness of a thousand feet in a distance of a few hundred yards. The Tertiary rocks are interesting also for their weird colors, of which the beds along Furnace Creek and at Ryan are an example, and for the deposits of saline minerals which the shales contain, as, for example, boron minerals (chiefly colemanite), gypsum, celestite and rock salt.

No remains of animal life have yet been found in the Tertiary beds, although careful search has been made for them. Consequently, the stage of the Tertiary to which the deposits belong is not known. It is believed, however, that most of the deposits are Miocene and that a part of them are Pliocene. Many limestone beds contain algae and are obviously similar in origin to travertine deposits that are forming about warm springs in the region at the present time.

QUATERNARY DEPOSITS

The Quaternary, or youngest deposits, of the region include all the alluvial fans, the great salt deposit in the bottom of Death Valley, many dissected gravel terraces and a series of dissected lake beds that occupy the Amargosa Valley between Shoshone and Tecopa. The lake beds in the Amargosa Valley are of early Quaternary (Pleistocene) age, for bones and teeth of a Pleistocene elephant have been found in an ashbed associated with them at Shoshone. The ash is altered locally to bentonite, which is worked commercially. The Ubehebe craters in the northern part of Death Valley include some cinder cones of very late Quaternary (Recent) age which are probably not over a few hundred years old.

The salt deposit ("Devil's Golf Course") on the floor of Death Valley represents the saline residue of an evaporated lake. Wells 1,000 feet deep drilled in the deposit have gone through alternating beds of clay and rock salt down to that depth without reaching bed rock. Each pair of salt and clay beds may record the drying up of a Quaternary lake. The salt deposit on the floor of the valley may mark the drying up of the last of these lakes that existed in the valley. Sets of very faint shoreline terraces preserved at some places about the margins of the valley may mark the shores of this lake. The shoreline terraces may be seen at Mormon Point, where they are cut on upturned Tertiary beds; at a point about a mile northwest of Ashford Mill, where they are cut in a slope of basalt; and on old alluvial slopes at the mouth of Warm Springs Canyon. The lake marked by the terraces has been described by Blackwelder,[10] who has named it Lake Manly. According to Blackwelder the lake marked by the highest shoreline may have been about 600 feet deep and about 100 miles long.

[10] Eliot Blackwelder, "Lake Manly: An Extinct Lake of Death Valley," *Geog. Rev.*, 23: 3, 464–471, July, 1933.

DISTRIBUTION OF THE ROCKS

ARCHEAN ROCKS

Archean rocks form most of the steep face of the Black Mountains along the eastern edge of Death Valley from Bad Water southeastward to the Ibex Hills and may be examined at many places along the road that follows the east side of Death Valley. At Bad Water they are chiefly gneisses. At Mormon Point the gneisses contain bodies of limestone. The unconformity between the Archean and Algonkian rocks is well exposed in the Ibex Hills at a point one mile north of Ibex Spring. A small area of Archean rocks lies at the south end of the Nopah Range near the Gunsight and Noonday mines. In this locality both Archean and Algonkian rocks are overlain unconformably by the massive bed of buff limestone at the base of the Lower Cambrian. Much of the northeast face of the Avawatz Mountains is composed of Archean gneiss. The base of the mountains is marked by a great thrust fault along which the Archean gneiss overrides Algonkian beds. A narrow belt of sharply folded and overturned Tertiary strata occupies the fault zone.

ALGONKIAN ROCKS

Algonkian rocks form the Ibex Hills and underlie most of the area extending south of these hills to Saratoga Springs and eastward to the Kingston Range. Gilbert[11] measured a section of them many years ago at Saratoga Springs. Later Campbell[12] described them at the same locality. Both Gilbert and Campbell suspected their pre-Cambrian age. The beds in this general locality are readily accessible from the main highway into Death Valley *via* Baker and Shoshone at the place where the road ascends a long alluvial slope from Amargosa River to the pass at the Inyo County line. The Algonkian strata form the ridges bordering the slope up which the road runs to the pass. Patches of the basal buff Lower Cambrian limestone lie unconformably in places upon the Algonkian beds. Still larger exposures of Algonkian beds in the Ibex Hills are visible from the summit of the pass. A small area of them in contact with Archean gneiss lies between Ashford Canyon and Jubilee Pass and may be seen from the road that runs down the east side of Death Valley. Other outcrops lie in Warm Springs and Anvil Springs Canyons on the Panamint side of Death Valley. If the Telescope group of Murphy is in fact Algonkian, then Algonkian beds form most of the crest of the Panamint Range and may conceivably be thrust over Paleozoic beds that appear to form much of the eastern slope. This eastern slope of the range has not yet been investigated.

[11] G. K. Gilbert, U. S. Geog. Survey W. 100th Mer., vol. 3, 1875, p. 170.

[12] M. R. Campbell, *Bull. U. S. Geol. Surv.*, 200, p. 14, 1902.

PALEOZOIC ROCKS

Paleozoic rocks form the Resting Springs and Nopah Ranges east of Amargosa Valley where they are conspicuous from great distances by their broad banding of light and dark gray, which suggests the stripes of a zebra. There is no more weird sight in the region than the striped Nopah Range as viewed from Chicago Valley in the afternoon light. Paleozoic rocks also form all the southwest face of the Funeral Mountains north of the road between Death Valley Junction and the Furnace Creek Inn and are likewise conspicuously banded. Eagle Mountain, near Death Valley Junction, is also composed of them. The Paleozoic section in the Nopah Range is the most complete in the region, extending, as it does, from the base of the Lower Cambrian at the Gunsight mine to and into Carboniferous beds above the pass at the north end of the range. The section in the southwest face of the Funeral Range is nearly as complete and the beds are likewise successively younger from west to east. At Echo Canyon, for example, the beds contain Lower Cambrian fossils; at Pyramid Peak they contain Ordovician fossils, which are very abundant in the stream cobbles washed down into Furnace Creek from the peak; still farther east, at the tip of the range northwest of Death Valley Junction, Mississippian fossils are abundant. Several parts of both sections are repeated by faulting.

MESOZOIC ROCKS

The largest exposures of Mesozoic granite in the Death Valley region are in the area described by Ball north of the area studied by the writer. One large body lies at the head of Cottonwood Canyon north of Emigrant Wash, where it cuts Carboniferous and Ordovician beds. A smaller body cuts Carboniferous and Algonkian strata in Warm Springs and Anvil Springs canyons in the area studied by the writer. The age of the granite which forms a large part of the Owls Head Mountains is not yet known, as these mountains have not yet been investigated.

In a very general way the pre-Tertiary rocks exposed in the Death Valley area are progressively older from east to west. For example, Spring Mountain, east of Pahrump Valley, is largely composed of younger Paleozoic rocks. The Nopah Range, west of Pahrump Valley, is chiefly Ordovician and Cambrian; the Resting Springs Range, next westward, Lower Cambrian; the Ibex Hills, next westward, Algonkian; and the Black Mountains, still farther westward at the edge of Death Valley, Archean. The reason for the descent westward in the geologic sec-

tion is obviously structural, for the prevailing dip of the beds in all these ranges west of Pahrump Valley is eastward.

TERTIARY ROCKS

The Tertiary rocks are very widely but irregularly distributed throughout the Death Valley area. There is good reason to believe that they underlie the entire Death Valley trough and the parallel Amargosa Valley trough. They underlie the embayments occupied by Furnace Creek and by Emigrant, Wingate, Owl Spring, Ibex and Rhodes Washes, although they are concealed at many places under Quaternary alluvial deposits. In the southern part of the Death Valley trough, as, for example, in the Confidence Hills, they are bent into sharp folds parallel with the axis of the trough, a feature indicating intense compression. They lie irregularly upon the mountain ranges, at places covering the slopes, and at other places forming the entire mountain mass. As a rule the beds dip eastward with the eastern slopes of the ranges, a feature which suggests that the ranges are tilted blocks. Tertiary rocks constitute all the main mass of the Black Mountains from Furnace Creek southward nearly to Bad Water and make the crest and eastern slope of these mountains all the way from Furnace Creek to the Ibex Hills. Several patches of them are involved in the faulting along the western face of the mountains—for example, a small area bordered by Archean rocks lies in Copper Canyon and another similar area lies at the tip of Mormon Point. A small area east of Shoshone is involved in the faulting along the west face of the Resting Springs Range. This area contains a colemanite deposit.

The largest continuous section of Tertiary rocks in the region lies along Furnace Creek and is familiar to all travelers who enter Death Valley by this route. The road that follows Furnace Creek is bordered by these Tertiary rocks all the way from Furnace Creek Inn to Dante's View. Just before reaching Dante's View the road ascends a picturesque canyon in rhyolite tuff and emerges upon rhyolite at the view-point. The Tertiary rhyolite is in contact with Archean gneiss just under and west of the view-point. An even more spectacular exposure of this Furnace Creek section of Tertiary rocks may be examined from the road that runs southward from Furnace Creek Inn to Bad Water. Along this road the rocks border Death Valley for 15 miles south of the Inn and their coloring is even more striking than along Furnace Creek. Golden Canyon, reached by a branch of the road, is in these rocks.

SCIENTIFIC EVENTS

THE INTERNATIONAL CONGRESS ON THE ANTHROPOLOGICAL AND ETHNOLOGICAL SCIENCES

THE International Congress on the Anthropological and Ethnological Sciences was concluded at University College, London, on August 4. Lord Onslow, the president, presided over a general meeting of the delegates in the Great Hall, and presented the report of the permanent council.

A general summary of the business transacted is given in the London *Times*. The congress passed a resolution expressing the opinion that representations should be submitted through the Secretary of State for India to the Government of India urging the need of a permanent organization for the census of India, accompanied by measures for the scientific and continuous collection of information relating to the Somatic types, religions, manners, customs, social organization and social linguistics of India. The resolution added that the system of honorary direction and organization in Assam might be suggested as likely to be of practical value if extended to the whole of India.

Another resolution which was passed recommended to the British Government and to all other governments engaged in the administration of native peoples that it was desirable that in each territory so administered one or more government anthropologists should be appointed as specialist officers, with a view to facilitating a deeper scientific appreciation of native customs and contributing in a scientific manner toward the solution of problems of the contact of native people with European civilization. The congress strongly supported the training in social anthropology of missionaries and government officers who were to work in native territories.

It was decided also to call attention to the urgent need of further research into the methods of investigating the mental aptitudes of African peoples. In a further resolution the need was urged for establishing courses of study in anthropology and ethnology in certain types of schools, and for organizing independent chairs in these subjects in universities.

It was agreed that the next congress should be held at Copenhagen in 1938, with Professor T. Thomsen (Denmark) as president, and that Professor John L. Myres and Alan H. Brodick should be retained as general secretaries. The inclusion in the 1938 congress of a section dealing with biometrics and biotypology was decided upon.

A permanent committee was set up to deal with the