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<i>Recent Archeological Research in Latin America:</i> DR. WM. DUNCAN STRONG	179
<i>The Problems of Aging and of Vascular Diseases:</i> DR. HENRY S. SIMMS	183
<i>Obituary:</i> <i>Charles William Lines, Jr. Recent Deaths</i>	186
<i>Scientific Events:</i> <i>New Haven Industrial Medical Service; Health Services of the Commonwealth Fund; Stalin Prizes; The Inter-America Bureau of the New York Academy of Medicine; The Shortage of Technically-Trained Chemists</i>	187
<i>Scientific Notes and News</i>	189
<i>Discussion:</i> <i>A Twelve-Month College Year: An All-Out Program:</i> PROFESSOR ALEXANDER SILVERMAN. <i>Mean Sea Level and Sand Movement—A Reply:</i> DR. FRANCIS P. SHEPARD and EUGENE C. LAFOND. <i>On Toad and Frog Abundance After Heavy Rainfall:</i> DR. ARTHUR N. BRAGG. <i>Calendar Reform and the National Academy of Sciences:</i> DR. W. E. CASTLE. <i>Fisheries Literature for China:</i> DR. W. F. THOMPSON	192
<i>Special Correspondence:</i> <i>Analysis of Post-War Problems and Procedures:</i> DR. HUDSON HOAGLAND. <i>The James River Drainage Area:</i> PROFESSOR SIDNEY S. NEGUS	195
<i>Scientific Books:</i> <i>Books on Geology:</i> PROFESSOR KIRTLEY F. MATHER. <i>Molecular Spectra:</i> PROFESSOR ROBERT S. MULLIKEN	197
<i>Reports:</i> <i>Defense Work of the Carnegie Institution of Washington</i>	199

Special Articles:

<i>A Basic Mechanism in the Biological Effects of Temperature, Pressure and Narcotics:</i> DR. FRANK H. JOHNSON, PROFESSOR DUGALD BROWN and PROFESSOR DOUGLAS MARSLAND. <i>Successful Rearing of a Second Generation of Mice on an Artificial Diet:</i> DR. LOIS K. ROGERS, DR. L. W. McELROY and DR. GEORGE R. COWGILL. <i>Fertile Tetraploids of Sesame, <i>Sesamum Indicum</i> Loew, Induced by Colchicine:</i> D. G. LANGHAM	200
<i>Scientific Apparatus and Laboratory Methods:</i> <i>A Model Geyser:</i> DR. J. D. FORRESTER and HOWARD W. THUNE. <i>Origin of Dipeptidase in a Protozoan:</i> DR. WM. L. DOYLE and DR. ELIZABETH K. PATTERSON	204
<i>Science News</i>	8

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RECENT ARCHEOLOGICAL RESEARCH IN LATIN AMERICA¹

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HIGHLY important anthropological research is in progress in Latin America at the present time. Inaugurated prior to the entry of the United States into the war, this work is an aspect of a long-time program of scientific and cultural cooperation between the American republics. These studies include ethnological and sociological research among various highland and lowland communities, physical studies among modern and ancient populations, and, as would be expected in one of the world's richest archeological areas, much exploration and stratigraphic excavation

¹ Address of the retiring vice-president and chairman for the Section of Anthropology, American Association for the Advancement of Science, Dallas, Texas, December 30, 1941.

in the ancient ruins. In all Latin America, archeology, ethnology, history and sociology blend into one closely interrelated and fascinating problem of cultural and racial interaction, an understanding of which is as important to the practical statesman as it is challenging to the social scientist.

During the last year the Institute of Andean Research, working under the auspices of the Office of the Coordinator of Inter-American Affairs, has placed ten parties in this vast field working in close cooperation with the scientists of the various Latin American countries. The present program of the Institute of Andean Research—ranging from northwestern Mexico to Chile—aims at completing and publishing on a

series of stratigraphic excavations in certain key areas which will assist in developing a sound and uniform chronology for the major cultures of the New World. Such a temporal framework is essential for any understanding of the interrelationships that existed between the high civilizations of Middle and South America and their influence on native North America. It has, moreover, a direct bearing on many modern historic, geographic and botanical problems of economic and sociological importance. Furthermore, the program as envisaged helps toward an understanding by each country of its own history; it brings a North American personnel of mature scholars and promising graduate students into creative contact with the Middle and South American fields; and by association with scholars in the various countries it provides for intellectual exchange and mutual understanding. Through the employment, where possible, of young regional archeologists it cross-fertilizes the technical disciplines in use and, by the publication of results, provided for in the plan, it makes permanent and available to all the scientific results of the work. There has been in many Latin American countries a very just pride in their Indian past. Such a program as this recognizes that pride and stimulates our own interest in the first colonizers and economic developers of the American continents.

Preliminary to the inauguration of this program Dr. George C. Vaillant, chairman of the Institute of Andean Research, made a rapid survey trip, visiting the various countries where work was proposed. In each he found both sympathetic interest and cordial cooperation which made the arrangement of technical details a mere matter of routine. Subsequent to his report the various field parties began their work, which is now in full progress. Due to this fact it is obviously impossible to give anything approaching a complete summary, but it is believed that a preliminary and partial report may have value at this time. In so doing an attempt will be made to indicate the manner in which these specific projects tend to interdigitate with various national or institutional research programs now in progress in Latin America.

Project 1, in northeastern Mexico, has for its director, Dr. George C. Vaillant, and its supervisor, Dr. Gordon Ekholm. With the full cooperation and assistance of Dr. Alfonso Caso, director of the Institute of Anthropology and History, and his colleagues, Dr. Ekholm is now conducting excavations in the Tampico region. A brief survey of border sites near Laredo, Texas, revealed non-ceramic sites as well as stone-faced, rubble mounds containing pottery and tobacco pipes, some of which were of platform type. In central San Luis Potosi, a more advanced culture than that of the historic Karankawa was investigated at

Buena Vista. Here both round and rectangular stone-walled mounds were excavated and various types of painted, incised and negative painted ceramics encountered. The round buildings suggest Huastec types, but the ceramics are different. Preliminary analysis suggests that the latter are related to wares from the early levels at Tajin and to certain types from Teotihuacan. Prior to the peoples of low culture present in this area in historic times, it appears that a sedentary, agricultural people occupied the region, possibly in Late Teotihuacan times, having relationships with both the Tajin and the Tarascan peoples of that period. Subsequent excavations near Tampico revealed plaster-covered conical mounds with stairways, in one case consisting of six superimposed layers. These contained burials accompanied by pottery which shows strong Mixteca-Puebla connections. Excavations in this region are still in progress.

Project 2, in western Mexico, includes Dr. A. L. Kroeber as director, Dr. Carl Sauer as co-director and Dr. Isabel Kelly as supervisor in direct charge of operations. The first portion of Dr. Kelly's work included both surveys and potsherd analyses in Guadalajara. The results of this survey correlate well with native settlement data in historic documents of 1525, and reveal that the majority of sites pertain to a ceramic complex dominated by Autlan Polychrome ware. There are three major ceramic complexes in this region, two date from the time of the Conquest and one is earlier. At the request of the Institute of Anthropology and History work is being carried on for some time in the vicinity of Apatzingan, Michoacan. This is proving interesting but difficult, as sites appear to be rare and material scarce. However, progress has been made in distinguishing the local cultures and toward correlating them with Colima cultures already distinguished in previous work. Further work is planned in the Tuxcacuesco-Sayula zones of Jalisco, where both local and Colima cultures occur and where evidences of aboriginal copper-working have been reported. As in the case of Dr. Ekholm, the work of Dr. Kelly has been fitted into the broad program now being so successfully prosecuted by the anthropologists of Mexico. Like the recent investigations of the National Geographic Society and the Carnegie Institution in the Vera Cruz region, this new work to the west and northeast fits in with the national program of Mexico and tends to link important areas heretofore isolated through lack of scientific exploration.

While much still remains to be done, the Maya area of Yucatan and Guatemala is relatively well outlined, thanks to the work of the Carnegie Institution and other scientific and national agencies. For this reason no projects were proposed here at this time. On the

other hand, San Salvador, one of the most heavily populated Central American countries, and highly important from the archeological standpoint, is little known. Project 10, with Dr. A. V. Kidder as director and John Longyear as supervisor, was therefore located in San Salvador. After preliminary study of national and local collections in this country, Mr. Longyear made an archeological survey of the trans-Lempa river region and, at San Andres in the western part, conducted excavations. Working in conjunction with the Carnegie Institution he has also uncovered deep deposits separated by a volcanic stratum at the great Quelepa site. These excavations promise to throw considerable light on the present obscure sequence of prehistoric cultures in this part of Central America.

To the east, the great Antilles chain extending from Florida to Venezuela likewise tends to link the northern and southern American continents. To extend work already accomplished here, and to specifically attack this problem, Project 5, including Venezuela and the West Indies, was established. Dr. Cornelius Osgood is the director of this project, Dr. Irving Rouse, associate director, with Dr. Carlos Garcia-Robiou as supervisor for Cuba and George Howard for Venezuela. At present Dr. Garcia-Robiou is continuing excavations in Cuba and Mr. Howard is excavating and making further surveys in Venezuela. During the last summer Drs. Osgood and Rouse excavated a number of midden and cave sites and made surveys in both the eastern and the western portions of Cuba. The excavations yielded extensive information on the preceramic Ciboney culture and indicated various culture sequences elsewhere. In Venezuela, Dr. Osgood and Mr. Howard made intensive surveys along the northern coast and up the Orinoco river. Sites were visited in the savannahs of the upper Tigre and Guanipa rivers and the center of a new culture located near the town of Barrancas on the lower Orinoco. Examination of the delta region of the Orinoco gave no indication of sites, which accords with the general nature of the country. Excavations were carried out on the north shore of the Gulf of Paria, and Dr. Osgood also made a survey of the island of Trinidad. Here he discovered archeological evidence which, in his opinion, unquestionably and objectively proves the long-assumed connections between South America and the West Indies. The survey was extended through western Venezuela and work is now in progress in certain sites thus indicated as having particular importance. In this work the cordial cooperation and assistance of the Cuban and Venezuelan governments and scientists, as well as that of various oil companies, has been invaluable.

In South America several projects are operating

particularly along the west coast and in the adjacent highland areas. Colombia, the home of the Chibcha and other important higher cultures, is as yet in the stage of regional or geographical surveys as concerns its archeology. Project 6, in Colombia, includes Dr. Wendell Bennett as director and James A. Ford as supervisor. Dr. Gregorio Hernandez de Alba, director of the museum and well known for his work at San Agustin and in the Tierradentro, as well as Dr. Luis Alfonso Sanchez, assistant director of the museum, are both participating in this work in addition to their own researches. Dr. Bennett and Mr. Ford have also received valuable advice and assistance from the famous anthropologist, Dr. Paul Rivet, now director of the Institute of Ethnology in Bogota and formerly head of the Musée de l'Homme in Paris.

Project 6 includes a general survey of Colombia, part of which was accomplished this summer, and intensive excavation in the Cali Region on the middle Cauca River between Quimbaya and the Tierradentro regions. Excavation in this area has already isolated new cultural materials in hollow shaft tombs. From five of these tombs came more than five hundred pottery vessels, two hundred from one tomb alone. Despite such finds, however, lack of large ruins makes location of sites difficult. Refuse deposits appear to be both rare and thin. Ancient house platforms, sometimes faced with rough stone, occur on ridges facing the valleys. Such house platforms range around ten meters in diameter and occur in clusters of as many as three or four hundred. Many olla fragments occur in these sites. Burial tombs are usually made in the outside slopes of house platform. They are usually shafts about one half meter in diameter reaching to a depth of two meters with vaults on the uphill side of the shaft. Larger tombs contain ollas with human bones, but others contain little else than bundle burials of single individuals. The house structures themselves were impermanent, no large ceremonial centers have been noted, and agriculture seems to have been of the temporary or milpas type. Mr. Ford is now engaged in excavation farther east in the mountains. It is hoped that this work as a whole will not only throw light on chronology but may also give some evidence of connections between the high cultures of Central America to the north and those of the Ecuadorian and Peruvian regions to the south. The area is vast and it is obvious that much work must still be accomplished before the work of Preuss, Hernandez de Alba and others around San Agustin can be linked with that of Mason in the Tairona country or with Central America proper.

In Ecuador Project 9B is under the directorship of Dr. Fay-Cooper Cole, with Dr. Donald Collier as supervisor and J. V. Murra as assistant supervisor

conducting the field work. After study of collections and data in Quito, as well as various surveys in which they have been assisted by Ecuadorian students, Dr. Collier and Mr. Murra have moved south in the highland region, where they are finding interesting sites. This project started somewhat later than the others and more detailed reports are not available. Thanks to the pioneer work of Dr. Jijon de Caamaño and a survey now in progress by the School of American Research at Santa Fé under Edwin N. Ferdon, Jr., it has been possible for Dr. Collier and his assistants to secure important guidance in attacking the problem of Ecuadorian culture sequences.

In the north central highlands of Peru another project is operating. This is Project 9A under the directorship of Dr. A. L. Kroeber, with Dr. Theodore McCown as supervisor in charge of field operations. Dr. McCown has received advice and much assistance from various Peruvian archeologists, including Dr. Luis E. Valcarcel, Dr. Julio Tello, Sr., Rafael Larco, as well as many other local authorities. After accomplishing some survey work on the north coast of Peru, Dr. McCown proceeded inland to the famous but little known site of Marca Huamachuco. Here he cleared and mapped a considerable part of the site since the plans made some years ago by Dr. Max Uhle have been lost. Excavation has revealed a variety of architectural types, carved stones and ceramic wares. The entire site appears to be pre-Inca. At last reports Dr. McCown was moving to Viracochapampa, north of Huamachuco, and hoped later to excavate at a previously unexplored site to the east. Ceramic and architectural sequences from this important but little known area should have great importance.

Farther to the south in the Peruvian Highlands, adjacent to Lake Titicaca and Bolivia, Project 7 is in operation. This South Peruvian Highland project has Dr. Alfred Kidder II as director, John Rowe as supervisor and Mrs. Harry Tschopik, Jr., as assistant supervisor. During the past summer Dr. Kidder and his assistants completed a reconnaissance of that portion of the Titicaca basin included in Peru. Many sites, both late and early, were discovered, including burial towers (chulpas), houses and forts. An interesting example of the latter type is the fortress near the temple of Pucara. This structure, referred to in the Inca chronicles, had hitherto been unreported. Numerous sites on the very early Tiahuanaco-Pucara culture level were found, and it is hoped that later excavation may solve the riddle of the temporal relationship of these two important highland cultures. Classification of pottery types, in addition to the surface and stratigraphic surveys, give good promise in this regard. Mr. Rowe, subsequent to visiting sites recently uncovered by the Wenner-Gren Expedition

near Machu Pichu, is now engaged in stratigraphic excavations in the vicinity of Cuzco. These should throw light on the development of Inca culture and its relationship to the earlier cultures of the adjacent highland region. This project is closely coordinated with the highland work of such Peruvian scientists as Dr. Luis E. Valcarcel, and others; and indirectly with that of Dr. Arturo Posnansky and his colleagues in Bolivia; and with the long-range ethnic and archeological program of the Peabody Museum of Harvard University.

Regarding the central and southern coasts of Peru, two projects are being undertaken. One of these (Project 8) is under the directorship of Dr. S. K. Lothrop, assisted by Counsellor Dr. Julio Tello, with Dr. Marshall Newman as supervisor. The cultural side of this work includes the preparation and publication of the vast data resulting from Dr. Tello's excavations at the very rich and important site of Paracas. The physical anthropology of the early Neropolis and Cavernas cultures of Paracas is being undertaken by Dr. Newman. In addition, Dr. Newman is cooperating in physical studies of the human materials secured by Project 3, mentioned below. Both the cultural and physical studies under Project 8 are well advanced and the work continues.

The second coastal project in Peru (Project 3) includes Dr. W. D. Strong as director and Gordon Willey as supervisor. Dr. Strong was in the field during the past summer and the work is continuing under Mr. Willey, assisted by John Corbett. Thanks to the unstinted assistance and cooperation of Dr. Tello, Dr. Valcarcel and other Peruvian archeologists, this project has achieved considerable success in intensive stratigraphic excavations in rubbish heaps with the primary purpose of defining ceramic types and sequences. As a result of the invitation of Dr. Tello, who for several years has been intensively excavating at Pachacamac, it was possible for Dr. Strong and Mr. Willey to make a deep stratigraphic cut at this very famous coastal site. This cut, made in a great refuse heap outside one entrance of the Temple of the Sun, revealed two meters of abundant Inca refuse, including other later ceramic styles, while below this were eight meters of deposit containing Interlocking or Proto-Lima pottery and an undescribed negative style. No indubitable Tiahuanaco-Epigonian sherds were encountered, but there is evidence that this intrusive style falls temporally between the Inca and the Interlocking. Thus, to the Inca-Tiahuanaco and Epigonian sequence encountered at this site by Dr. Uhle there is now added a long occupation by a local people who made the Interlocking or Proto-Lima type pottery. The depth of this Pachacamac deposit, some forty feet, and the great abundance of potsherds

from all levels convincingly demonstrates the great possibilities awaiting the refuse heap-potsherd stratigraphic method which, until the present, has rarely or never been successfully employed in Peru. In addition, one small tomb encountered adjacent to this cut yielded nearly one hundred excellent skeletons pertaining to the early Pachacamac-Interlocking period. These were removed by Dr. Newman and will be reported on by him. More recent work by Mr. Willey in the Chancay valley has added to this ceramic sequence. Here, at Cerro de Trinidad, he encountered several meters of consolidated refuse containing Chancay White-on-Red pottery beneath refuse containing Interlocking pottery styles. This was also confirmed by finding a large White-on-Red tomb under undisturbed floors of the Interlocking period. This discovery not only adds an earlier coastal type of ceramics to the Pachacamac sequence but also, on the basis of actual superimposition, reverses Uhle's and Kroeber's conclusions that White-on-Red ceramics were intrusive in Interlocking style tombs and were therefore later. Space is lacking to more than mention excavations already made or in progress yielding incised pottery of Early Ancon (or Coastal Chavin) type. This is the earliest ceramic type yet encountered in the general region and apparently represents a basic and wide-spread Peruvian culture. In certain aspects it approaches a truly Archaic level. Furthermore, certain evidences encountered suggest the presence on the central coast of a pre-ceramic culture, but these are as yet not entirely clear.

In coastal Chile, a pre-ceramic culture has long since been reported by Latcham and Uhle. Recent work by Junius Bird, supervisor of Project 4 (under the same directorship as Project 3), has objectively confirmed this fact and stratigraphically placed the

horizon. In the Arica region, Mr. Bird has encountered several stratified sites which run the gamut from hunting peoples of lithic culture to agricultural peoples with pottery, weaving and metals. Not only is direct superimposition present, but it also appears possible to work out many details of development and diffusion regarding horticulture, domestication and technical advance. Work farther to the south in the vicinity of Taltal is now in progress. More detailed results will be reported at a later time.

In conclusion, it must be emphasized that the foregoing is a mere "work in progress" report and stands in need of some correction and much amplification. It is, however, already obvious that detailed stratigraphic excavations in Latin America are yielding rich theoretical results. One thing is certain and that is that there is no lack of stratified refuse deposits on the Peruvian, Chilean and adjacent coasts. It will take time, skill and much hard work to get their full story, but when we do the rich record of ruined city and gorgeous grave find will fall into order and assume cultural meaning within a historical frame. The discoverer of America was not Columbus nor did the European create those great agricultural and economic resources which revolutionized the post-Columbian world. There is much to be learned, both socially and economically, from the past and present achievements of the American Indian, and he would be provincial indeed who regarded such facts as merely academic. Thus, the work continues on a broad front with the close cooperation of North, Central and South American scientists. Its aim is a deeper knowledge and a better application of those vast human and ecologic resources which pertain to the western hemisphere but, in the future as in the past, will actually affect the entire world.

THE PROBLEMS OF AGING AND OF VASCULAR DISEASES¹

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THE PROBLEM OF AGING

THE medical problem of aging is more concerned with prolonging the stamina of youth and middle age than with extending the lives of the aged. It is hoped that we may delay senility rather than prolong it. Although aging has numerous manifestations, such as loss of hair color, of muscular tone and of sex activity, the average individual is most concerned with two

manifestations, namely, the progressive loss of physical and mental ability on the one hand and the rapidly increasing death rate with age on the other hand.

The increasing death rate appears to be the only manifestation of aging which, during adult life, shows wide changes that are subject to accurate measurement. A study of the mortality data brings out the great importance of the problem of aging. Human death rate is at a minimum at the age of ten when only one child in 800 dies each year. If the death rate remained at this level throughout the whole life span our life expectancy would be 550 years, instead of 63 years as at present. In reality our death rate

¹ Part of the material in this paper was presented at the Symposium on Aging at the American Chemical Society meetings in Atlantic City, September 9, 1941. The investigation has been aided by grants from W. R. Warner and Company and the John and Mary R. Markle Foundation.