AMERICAN SCIENCE IN THE PHILIPPINES

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The independence long and ardently ught by Philippine patriots for their and country was all but a reality en, in December 1941, the Japanese nched the ruthless campaign of gression that shattered this aspira- n along with unnumbered others. the normal course of events, opera- n of the Tydings-McDuffie Act (the hilippine Independence Act") would July 4th, 1946 amicably and legally ve severed the slender political ties ich still linked the Philippines to the ited States, but these were now vio- tly and prematurely ruptured. This gic situation brings urgently to the e the question of our future rela- ns to the Philippines, a question ich can be considered only in the ht of past events.

f imperialistic design played any rt in our acquisition of the Philip- es, as has been charged, our coun- 's long-range program for the is- ds, as clarified almost immediately er the ratification of the peace treaty th Spain (in Senate Resolution of bruary 14, 1899) was anything but perialistic:

". . .it is not intended to incorpor- te the inhabitants of the Philip- pine Islands into citizenship of the United States, nor is it intended o permanently annex said Islands s an integral part of the territory f the United States; but it is he intention . . . to establish on aid Islands a government suitable o the wants and conditions of the nhabitants . . . , to prepare them or local self-government, and in lue time to make such disposition f said Islands as will best promote he interests of the citizens of the United States and the inhabitants f said Islands."

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AMERICAN STEWARDSHIP

Thus at the outset we acknowledged ourselves the temporary stewards of this nation, and committed ourselves to a program unique in its altruistic purpose and high objectives.

What then, after the lapse of more than four decades, can be said of our stewardship; was it good? One answer to this question, perhaps the most convincing of any, was given by the Filipinos themselves in the dark months after Pearl Harbor, when 20,000 of their finest young men perished fighting side by side in common cause with our own American soldiers, in a demonstration of loyalty so unflinching that the President of the Commonwealth, with just pride, characterized it as without parallel not only in the Orient but in the history of colonialism. None of us are likely ever to forget it. Such loyalty to the American cause appears all the more significant when we recall that four decades ago these same people viewed us as the aggressors, and with equal courage resisted us. Our stewardship could not have been altogether unwise to beget so revolutionary a change in so brief a period. In the last analysis the truest judgment of a nation's colonial policies may be that which history pronounces with the governed themselves as its spokesmen. At Bataan the Philippine people translated into deeds the words earlier spoken by Manuel Quezon when, at his inaugural as first president of the island republic, he said, "The Philippines look back with gratitude to the day when destiny placed the land under the beneficent guidance of the United States."

Americans, too, have an answer, and their concensus is that "the Philippine experiment", our only major venture

in colonial administration, was a brilliant success, providing a page in history we may regard with special pride. For all of the presidents of the United States, regardless of party affiliations, have scrupulously adhered to the original statement of policy with respect to the Philippines. As their representatives to the Islands, the presidents have assigned a succession of exceptionally able statesmen, men like William Howard Taft, Leonard Wood, Frank Murphy, and Francis Sayre, who on the opposite side of the world in turn devotedly undertook to lead a foreign people into modern ways of thought and life. Granted that the experiment involved much typical American trial-and-error, by and large it was a "beneficent guidance".

RÔLE OF SCIENTISTS

I do not propose to review in detail the Philippine record, as that has been ably done by others,[1] but I shall give thought to one aspect of it that impressed me greatly during a year's sojourn in the Islands in 1939-1940. I have reference to the fact that the remarkable development of the Philippines during the American regime would not have been possible except for the active participation of American scientists in the work which our government undertook in the Islands.

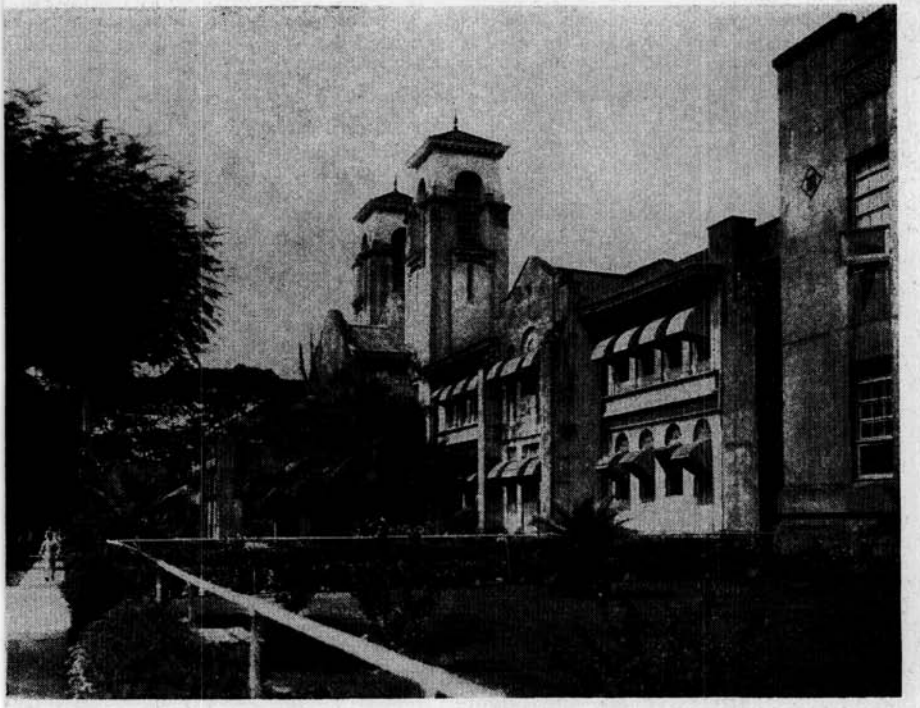
This participation had its origins early. On January 20, 1899, while military control was still far from complete throughout the Islands, President McKinley appointed a committee of five men (two military and three civilian members) to investigate critically and first hand the Philippine situation. This "First Philippine Commission" duly submitted a comprehensive and scholarly report embodying information and recommendations that proved highly significant in determining subsequent policies. One of the dominant members of this Commission, and the principal contributor to its report, was a scientist, Professor Dean C. Worcester, zoologist of the University of Michigan, whose years of previous exploratory work in the Philippines had given him unequalled knowledge concerning the Islands.[2] To Dean W cester must be given much of credit for the marked degree to wh modern science was enlisted to se humanity in the Philippines.

On April 7, 1900, McKinley appoir the Second Philippine Commiss similarly consisting of five memb (all civilians). Membership inclu William Howard Taft, chairman, again Dean C. Worcester, only mem carried over from the First Commiss This Commission was assigned great responsibility of actually set up a civil government, one wh would contribute to "the happin peace, and prosperity of the peop On July 4, 1901, when Mr. Taft sumed full control of the Philippi as first civil governor, the other f members of the Commission became partmental heads under him.

Through these circumstances, D C. Worcester became the first Secret of the Interior of the Islands, and n of the scientific divisions of the g ernment—specifically those concer with public health, scientific lal atories, national forests, public lar agriculture, fisheries, mining, weat service,[3] quarantines, and the adn istration of the pagan mount tribes—came to be organized by a r who combined scientific training v exceptional administrative ability constructive imagination. Worce continued as Secretary for tw years, his tenure of office greatly ceeding that of any other member the Commission. A man of str convictions, extraordinary vitality, vigorous action, he was not without complement of enemies, but his lea ship in organizing the scientific ag cies of the Philippine governm during the critical early years of American administration is now re nized as having been as capable far-seeing as it was fearless.

BUREAU OF SCIENCE

Worcester's university experie led him to oppose duplication scattering of effort, and his insiste on centralization led to establishm of the Bureau of Government Lal atories, which in 1905 united with



Bureau of Science, Manila
ourtesy of the Division of Territories and Island Possessions, Department of the Interior.)

reau of Mines to become the Bureau Science. A colleague of that period, . Victor G. Heiser, states[4] that Wor-ster's greatest achievement was to ssemble under one administration, as as practicable, all the scientific rk of the government, building up in e unit the most modern organization the laboratory field that any country s evolved."

We need not trace the later history the Bureau of Science and other entific units of the government, ex-ot to remark that despite some un-vorable changes, consolidation and laboration have continued to char-erize scientific work in the Islands a remarkable degree, and have justi-d themselves by a distinguished re-rd of achievement. The plan of a ntralized "Bureau of Science" has at-icted the attention of other govern-nts, and provided them with a nvincing example of the practicabil-ity of such an organization.

The constructive interest of President Theodore Roosevelt in scientific aspects of the Philippines during these early years is indicated in a letter dated February 7, 1905, to the Senate and House:

> "Circumstances have placed under the control of this government the Philippine Archipelago. The islands of that group present as many interesting and novel questions with respect to their ethnology, their fauna and flora, and their geology and mineral resources as any region of the world. At my request the National Academy of Sciences appointed a committee to consider and report upon the desirability of instituting scientific explorations of the Philippine Islands . . . The surveys . . . should be undertaken as a national work for the information not merely of the Philippine Islands, but of the people of this country and of the world. Only preliminary explora-

> tions have yet been made in the archipelago, and it should be a matter of pride to the Government of the United States fully to investigate and describe the entire region."

Scientific explorations of the type recommended by Theodore Roosevelt, so clearly reflecting the personal interests of this president, were in due time carried out largely through the various divisions of the Philippine Bureau of Science.

PIONEER RESEARCH

To the Americans who comprised the early scientific staffs in the Philippines, the opportunities for pioneer research in the Islands provided a thrilling venture. The great archipelago, comprising over 7,000 islands extending north and south through the tropics a distance of nearly 1,200 miles, has a land area of about 115,000 square miles, an area comparable to that of Japan, of the British Isles, or of Italy. The flora and fauna of the islands and the surrounding waters are indescribably rich, and no less attractive are the opportunities for research in such fields as anthropology, ethnology, and tropical medicine. In the study of this vast scientific field, beginnings had been made during the Spanish period, but little systematic research of the type launched by American workers a few years after the turn of the century. Their investigations, pursued year after year and based on data that became increasingly comprehensive, eventually led to publication of monographs like those of E. D. Merrill, W. H. Brown, and H. N. Whitford on the flora; by E. H. Taylor on the vertebrate fauna; by R. C. McGregor on the bird life; and by H. O. Beyer on the ethnology of the Islands. Other studies dealing with infant mortality, malaria and various tropical diseases like dengue fever, sanitation, fisheries, city water supplies, geology and mining, forestry, problems of plant and animal husbandry, and additional subjects too numerous to list, reflect the many-sidedness of the scientific program. Directed by Americans up to the middle '30's, with the establishment of the Philippine Commonwealth these programs were largely taken over and continued by F pinos who had been well trained such responsibility.

A statement[5] by E. D. Merrill c cerning achievements in botanical deavor may be taken as representat for other scientific fields as well:

> "In the period 1902 to 1923 . . . Ma nila has been made a center o botanical research for the Philip pines, and one of the few produc tive centers of research in Asi and Malaysia . . . At the presen time this rich flora is better know than is that of any other part of th entire Malaysian region, excep Java and parts of the Malay Pen insula. This advance has bee made possible only by the wis policy of centralization of scienti fic work adopted by the Philippin government, cooperation betwee existing units, and the granting o the necessary financial support b the government."

Inevitably the progress in investi tions of this type was accompan also by the healthy growth of rela activities such as the development scientific libraries, museums, and tanical gardens, but to give an acco of these would lead us far afield.

PUBLISHED REPORTS

In 1906 was established the Phil pine Journal of Science, under edit ship of Dr. Paul C. Freer. The offic publication of the Bureau of Scie and hence supported by the gove ment, this Journal continued for years to provide a channel of publi tion for all phases of scientific wo particularly the research of the ma specialists brought to the Islands the government and university sta The advantage of combining within covers of a single journal the grea part of the country's scientific lite ture has been gratefully acknowle ed by many workers. Up to the fall 1941, when Japanese invasion of Islands presumably terminated pu cation, no less than 75 volumes of Journal had been issued. Filling ma library bookshelves, these volumes g monumental testimony to the wh some vigor with which scientific search flourished during the Ameri

Mayon, altitude 7,943 feet, south end of island of Luzon. Most famous Philippine volcano and one of the most perfect volcanic cones known. Established as a national park in 1938.

(Courtesy of the Division of Territories and Island Possessions, Department of the Interior.)

ecades. One of the most interesting eatures of the Philippine Journal of cience is the fact that Volume 1 is lmost exclusively the product of merican authors, whereas Volume 75 s almost exclusively the product of ilipino authors. Through the intervening volumes one may trace the tages by which American scientists repared their Philippine colleagues or scientific independence.

EXPEDITIONS

This rapid survey permits only passng mention of the expeditions sent to he Philippines by such institutions as he U. S. National Museum, the Amerian Museum of Natural History, the ield Museum, and various univerities. These have contributed greaty to our knowledge of the Islands, specially in ethnology and anthrology. We recall in this connecion that some of the most important thnologic investigations were made y a member and former president of his academy, Dr. Fay Cooper-Cole, who in 1907-1909 headed expeditions of the Field Museum to Luzon and Mindanao under sponsorship of Robert F. Cummings of Chicago.[6] On one of these expeditions, a scientist of the Field Museum staff, Dr. William Jones, met death in northern Luzon at the hands of hostile tribesmen, Ilongots.

COASTAL SURVEYS

Similarly I can only allude to the program of charting Philippine waters which was begun by the U. S. Coast and Geodetic Survey in 1901, and only in recent years has neared completion. In 1939, the third census of the Philippine Islands taken during the American regime furnished occasion for the publication of a monumental atlas,[7] by far the most complete and authentic work of its kind dealing with the Islands. Fortunately a few copies of this atlas reached the United States before the Japanese captured Manila, so our country is not wholly deprived of the use of this all but indispensable work.

NATURAL RESOURCES

Among a people as predominantly agricultural as the Filipinos, an obvious field for "science in the service of the people" lay in the improving of their farm stock and crops, and in seeking new agricultural products suited to the soil and climate of the Islands. In these fields also notable progress has been made, and to review the activities of the Bureaus of Plant and Animal Industries in the Philippines would be to outline the work of our own Department of Agriculture, as adapted to the needs of this tropical country.

These have been decades during which conservation of natural resources has come to loom ever larger in our national thought and planning. It was but natural that Americans carried with them to the Philippines the philosophy of conservation and wove it into the fabric of insular life and government. As a result, the superb tropical forests of the Philippines, that cover over 68,200 square miles or about 60 percent of the total land area of the Islands, and that includes some of the finest commercial woods in the world, are 97.5 percent under government control. No feature of the Philippines impressed this speaker more deeply than the somber splendor of the vast rain forests. The knowledge that these were being administered in accordance with wise forestry practice[8] and for the benefit of future as well as present generations was truly gratifying.

The Bureau of Forestry has charge not only of the country's forests but also of a system of National Parks, much like our own, including in 1940, 26 different parks, with a combined area of 647 square miles. Establishment of these parks represented the first steps in a program intended ultimately to preserve for public enjoyment and inspiration, in their primitive state, all of the finest scenic areas of the Philippines, as well as areas of unusual scientific and historic significance.

In fish, game, and wild-life conservation, control of mineral resources, and the combating of soil erosion, substantial progress has been made, and in the normal course of events muc greater results could have been cor fidently anticipated. Soil erosion is particularly serious problem in thes islands, where the heavy rainfal which in places amounts to as much a 180 inches a year, ravages the dee mantle of tropical soil wherever it unprotected.

One of the most noteworthy develo ments of recent decades and one i which science has played a fund mental part has been the spectacul rise of the Philippine mining industry Prior to 1907 Philippine miner production was not even listed i statistical records as a minor industr By 1938 mining ranked second only sugar production, and the Secretary Agriculture and Commerce could pr dict that the time was not distar when mining would displace sugar the premier industry. In this phenon enal record, gold played the leadin part, the production rising rapid till in 1939 the Philippines rank fifth among the gold-producing cou tries of the world, surpassed only b South Africa, Canada, the Unite States, and Australia. In America territory the Philippines ranked secon only to California. Since 1907 th islands have produced more tha $250,000,000 in gold.

Systematic geologic investigation le also to the discovery of importa deposits of base metals and non-meta lic minerals, and recent years ha seen a striking expansion in the pr duction of these materials, whic incidentally, were purchased large by Japan. Of the total value of th 1938 production, iron made up 36 pe cent, copper 18 percent, chromite percent, manganese 9 percent, and no metallic minerals 23 percent. Doub less during the past year production these highly strategic materials h been accelerated by the Japanese.

During 1939-1940 the writer parti ipated in a petroleum survey of th Philippines, conducted for the Con monwealth Government by a staff American geologists. Prospects f location of significant oil fields we very favorable on certain islan and exploratory drilling was under w

hen the Japanese invaded. Presumbly drilling crews and the several eologists still in the Islands were ken prisoners. Among these was r. H. Foster Bain, formerly Chief of ie Illinois Geological Survey (1905-09) and a charter member of this cademy. Many other scientists are so being held prisoner at Santo omas University, Manila.

EDUCATIONAL PROGRAM

One cannot consider the impacts of merican science on Philippine life ithout reference to the American ducational program. A Philippine ducational authority, V. R. Catapang, as stated[10] that "There is not, perhaps, the record of war another example here a conquering power has taken rst of all to the teaching of the conuered, but in the very first minute American occupation of Manila and her parts of the Islands, the American aders began to deliberate on the purit of this grand ideal." The schools Manila, disrupted by war, were stored to successful operation in vo weeks. So began the American fort to make education available to l. From the chaos which war had rought to the Islands emerged a mplete system of public schools, with hoolhouses "scattered into every ook and cranny of the archipelago, om the mountain Igorot country own to wild Moro land." The first achers were volunteers from among ie American soldiers. Later Amerian men and women teachers came to ie Islands by the hundreds. Not ncommonly the American school acher, assigned to an isolated barrio an isolated island, had no other hite neighbors within many miles.

It was a leading Filipino citizen of anila who first emphasized to me iat in this effort to achieve universal ducation our country was embarking a policy that was new to colonial dministration. The results of this mbitious effort have been impressive. or years education in the Philippines as accounted for almost one-third of ie government budget. At the time the Japanese invasion, expansion of e educational work was still vigorously progressing. The total school enrollment was then over 2,000,000. There were almost 11,000 primary schools, over 1,300 intermediate schools, 114 secondary schools, 5 junior colleges, and the University of the Philippines, not to mention the many excellent private schools. Illiteracy had dropped from about 80 percent in 1903 to less than 50 percent in 1939, and within the younger generation one rarely encountered illiteracy. English had largely taken over the place formerly held by Spanish.

The public school system has provided the main channel through which our government has disseminated the all-important principles of sanitation, hygiene, and good health. Modelled too closely after American schools at the outset, the Philippine system gradually became closely adapted to the distinctive needs of the country, placing increased emphasis on vocational training and, particularly, agriculture. In later years agricultural training has been included in the curriculum of even elementary schools. While in the Islands, the speaker found it extremely interesting to examine the many school textbooks which American scientists, residing in the Philippines, had prepared especially for use in the teaching of geography, biology, agriculture, general science, and similar subjects in the Philippine public schools.

For the purpose of giving vocational and citizenship training to older people, in 1936 the office of Adult Education was established, and a splendid beginning was made in offering adult training in gardening and other phases of agriculture, as well as sanitation and homemaking.

Foremost among the higher institutions of learning in the Islands is the University of the Philippines, founded during the American regime in 1908.[11] By reason of its situation in the heart of Manila, the departments of this university, especially its scientific ones, have profited greatly from close cooperation with such government units as the Bureau of Science, whose staff members have in many cases served also on the faculty. Through addition

of college after college, the University gradually developed into a great, complex institution, and a principal center for scientific instruction and research, with modern buildings and facilities, beautiful spacious grounds, a faculty of about 200, and an annual student enrollment of nearly 8,000. It has offered courses leading to degrees in Medicine, Dentistry, Pharmacy, Forestry, Agriculture, Veterinary Science, Engineering, and all the other branches one might expect to find in an institution patterned after the American state university. A frequent visitor to the University of the Philippines in the summer of 1940, I found it difficult to realize I was not back on an American campus. For some years the University has maintained branches at the cities of Baguio and Cebu. In some fields the University has offered graduate work, and in particular it has stressed its facilities for advanced studies in natural science, but many of its graduates have chosen to earn their higher degrees at universities in the United States, where the Philippine graduate student has become a familiar figure. It is of interest to note that in later years the administrative officers and faculty of the university have consisted almost entirely of Filipinos.

PUBLIC HEALTH

It was in the field of public health that the American government made what many would regard as its greatest achievement in the Philippines. This record is one which parallels that made in Panama, in connection with the building of the Panama Canal; but in many respects it is even more remarkable although less generally known. Many names loom large in the conquest of disease in the Philippines —to mention a few, Dean C. Worcester, Paul C. Freer, Richard Strong, Victor G. Heiser, Major Frank S. Bourns, Lt. Col. G. C. Dunham, Col. L. M. Maus, and Governor-General Leonard Wood. Of the pioneering period, 1898 to 1914, Worcester has been called the "leader" and Heiser the "great administrator and field officer". The autobiography[12] of Dr. Heiser, who was Commissioner of Public Health in the Islands from 1905 to 1914, is a dramatic narrativ that recounts how the health campaig was vigorously and relentlessly wage along many fronts, often with slo gains that were maintained on through ceaseless vigilance. Dr. Heis states[13] that when this campaign w begun there was not a good operatir room in the Islands, and no laborato facilities. "To remedy this conditic Worcester, in 1900, had formulated plan on a noble scale to build a hospi al, a medical school, and a laborato of science all in one group—the medic center idea adopted in the Unite States so much later. . .After eigl years of steady pounding he w rewarded with success."

This was one phase of a progra that entailed the establishment smaller hospitals throughout the Arc ipelago; the training of native docto and nurses, and their assignment remote posts on scattered islands; th cleaning up everywhere of contamir ated water supplies and other sourc of infection; the building of mode waterworks and sewer systems; intr duction of a universal and at first f from popular program to educate th populace in sanitary and hygien principles; wholesale vaccination; th drafting of laws and regulations f the protection of health, including sanitary code, pure food and dru legislation, laws and regulations go erning the teaching and practice medicine, nursing, dentistry, an pharmacy. In this campaign priva organizations, such as Protestant an Catholic missionary groups, cooperate through their schools and hospital From 1922 to 1935 the Rockefell Foundation supported a broad publ health program outlined by Dr. Heise which provided for a graduate Scho of Public Health and Hygiene at th University of the Philippines, an exchange fellowships which each ye enabled more than thirty Filipin doctors to take graduate courses in th United States. The latter provisio has been most important in preparin the Filipinos for the responsibility carrying on for themselves.

Results of the health campaign hav been sensational, indeed almost incre

e. One after another the fearful idemics of small pox, cholera, and bonic plague were brought under ntrol. Smallpox was essentially ped out. Dysentery and tuberculosis re checked, malaria greatly reduced. pers were segregated and given all e help that medical science and mane consideration could provide. rough more balanced diet and gen- al improvement of their well being,[14] e people made notable gains in gor and resistance to disease. Fig- es strikingly reflect these changes. ie population of the Islands more an doubled during the American riod, increasing from less than ven million in 1903 to over sixteen llion in 1939. Death rates have opped—in Manila, for example, from per 1000 in 1904 to 18 per 1000 in 35. So also infant mortality, which fers the most striking figures of all; Manila the decrease was from 80 r 100 to 6 per 100.

SUMMARY

Obviously this record of science in e Philippines should not be regarded something apart from corresponding anges in all the walks of life in this sular country. A recent writer, illiam H. Haas, has commented[15] at "culturally as well as economically e progress. . .has been little short of enomenal. Probably no other coun- y can show a similar change. The wlessness of Spanish days has been placed by a well-organized govern- ent with an efficient constabulary of tive soldiers who, through their de- tion to duty, have made their coun- y as law-abiding as in any other ogressive nation. Where formerly stice was largely a mockery, today urts carry out constitutional guar- tees through native judges leaving tle to be desired. Besides this, urches, schools, good roads, sanitary ntrol, and the like place the Philip- nes, the only Christian nation in the ir East, well to the front among tions."

My subject is one that can be pur- ed indefinitely, but I do not propose develop it further. This much has en said to establish the thesis, that our country has given a good account of its stewardship of the Philippines, and that in carrying out its role of a "liberating rather than a conquering nation" the American government found in science an indispensable aid.

I have sought to make this point for reasons other than mere academic interest. Through four decades the American Philippine relationship remained as Ralston Hayden puts it, "happier and more fruitful than any other which has existed in modern times between a dominant and a dependent people."[16] But since the fall of Corregidor, the Islands have been cut off from all contact with us, isolated as if on another globe. We can only conjecture concerning the condition of the people, and the fate of institutions that Americans and Filipinos together erected during the years of common endeavor. This much is certain, that when allied victory in the far-off Pacific theatre of war again brings peace and freedom to the Islands, we can expect to find in ruins much that we cherished because it was the expression of our best efforts and our finest national traditions. Who will say that in that day it is not incumbent upon us to take up anew the Philippine program, even if we must start again almost at the beginning?

There are implications even more far-reaching. To predict the future is beyond the ken of any man, but we may assume that in the post-war period toward which we hopefully look, the rehabilitation of crushed and broken nations everywhere will be an obligation, urgent and inescapable, devolving upon those nations like our own that are rich and strong, or have suffered least. When that time comes, it may well be that our government, seeking the pattern for a program which will have for its purpose the aiding of a stricken world, will turn to its Philippine experience and find in it a new and larger meaning than has yet been evident. For if it proves anything, the Philippine experiment demonstrates that the principles of the Atlantic Charter are definitely workable among colonial peoples even

in the most distant corners of the globe.

And undoubtedly, as was the case during the years that followed Dewey's victory at Manila Bay, civilians will again be assigned to take the place of the military, and build a new and better order on the ruins of the old. If history thus repeats itself, this time it may well be on a global scale, and the place of science in the program will be large. I am confident that once again American men of science will join with statesmen, educators, and others in meeting these new responsibilities, accepting their challenge in the same spirit of high adventure that distinguished those colleagues of a generation or two ago, who journeyed across half the world to labor in the Philippines.

In times like these, when on unnu bered battlefields we witness the de astating effectiveness of science wh used for purposes of destruction, need to recall that science is no l powerful and no less efficient wh used in the pursuits of peace. In its science is neither good nor ev applied in war it can devastate a nati or, in the service of Christian chari it can prove an agency of blessing us to banish fear and pestilence. T choice between such alternatives li with humanity. As a case in point a one that gives us much of hope f years to come, I submit to you t record of American science in t Philippines.

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11. Other higher institutions of learning the Philippines include the followin University of Santo Tomas, Univers of Manila, National University, Cen Escolar University, Philippine Wome University, Far Eastern University, Si man University, and Philippine Cent College. Santo Tomas University, fou ed in 1611 and supported by the Domi can Friars, is the oldest university un the American flag (25 years older th Harvard University, oldest university the United States).
12. Heiser, op. cit.
13. Ibid., pp. 151-152.
14. In recent years the wages of Filipi workmen have been nearly four tim those of workmen in nearby Orien countries.
15. Haas, William H., Outposts of Defen 1942. Pp. 32-33.
16. Hayden, Ralston, The Philippines, Study in National Development. p. x