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The editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are *sharp*, the articles *short*, and the facts *authentic*, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

THE BLOOD OF ALL RACES.

Ethnologists of the Smithsonian Institution have investigated the Filipinos, with results that are of rare interest to science. They have called attention to the fact that in the veins of the tribes of the archipelago flows the blood of all the races and varieties of mankind. The Smithsonian Institution is giving special instructions to those intending to explore the caves of the Philippines for crania, and to search for other ethnological data.

In the make-up of the composite Filipino, the darker substratum has been supplied by Negrito, Papuan, and African negro. A copper tint and fighting blood have been furnished by Malay and Polynesian. A lighter hue and certain arts have come from Japanese, Chinese, and Cambodian. Hamite, Semite, and Aryan have stamped their image upon the islanders. Even an ancient stream of Caucasian is traced by ethnologists; and, stranger still, perhaps, the discovery has been made that a rivulet of American Indian blood found its way to the cosmopolitan veins of the Filipino through the channels of two centuries of uninterrupted commerce between Mexico and Peru and the archipelago.

In view of this converging of racial streams in the Filipino, scientists of the American Bureau of Ethnology hope that a detailed investigation of the habits, implements, relics, beliefs, legends, etc., of the various tribes of these islands will be undertaken. In addition to exploration in search of prehistoric crania in caves, the purpose is to make a comprehensive collection of native hammers, saws, adzes, clamps, and every primitive implement representative of stages of invention between the stone age and modern times. It is expected, too, that instruments of prehistoric engineering may be found.

It is known that some of the Filipino tribes are skillful metallurgists, inheriting doubtless from ancient Malay artisans dexterity in fine hand processes. It is hoped by the scientists that additions to one of the most interesting chapters in human history will be made through discoveries in the Philippines of the secrets concerning the ancient arts of working metals. Collections are to be made of the early poetry, tribal proverbs, legends, folklore, and all literary material, particularly that which will reveal the influence of the invasion from India that took place several centuries before the Christian era.

The anthropologists who are to attempt the untangling of the record of centuries of race interfusion in the Philippines realize that they have a very big undertaking on their hands, but this gives added zest to the research. A special request has been made of officers of the United States to assist in collecting everything that may help to throw light on the story of the early savage navigators who cruised in the channels of the archipelago. In answer to inquiries, the United States Treasury Department has assured the scientists about to embark on ethnological work in the Philippines that collections brought back for the Smithsonian Institution will not be subject to duty.

FINAL LESSONS OF THE GERMAN AMERICAN WAR GAME.

With the publication in the current issue of the SUPPLEMENT of the fourteenth of our series of articles on the naval war game between the United States and Germany, we reach the close of this most interesting and instructive struggle. Our readers will, of course, have formed their own conclusions as to the lessons to be learned therefrom; and that the publication of this matter has awakened widespread attention, and has served the useful purpose of instruction as to the relative strength of our own and the German navy, is shown by the large number of letters that have reached this office from all parts of the United States, some of which we have from time to time made public.

PANAMA CANAL.—It will be generally agreed that the most important fact brought out by the war is the great strategical advantage which would have been conferred upon this country by the existence of the Panama Canal. It was because we had no short cut to the Pacific that the Germans, in the early stage of the conflict, were able to concentrate an overwhelming and homogeneous force of battleships at Manila, and practically wipe out the heterogeneous fleet of battleships, monitors, and cruisers which had been hastily assembled for the defense of our naval base in the Far East. In that fight we lost four battleships, two monitors, and four cruisers; and it was only after sufficient time had elapsed for us to concentrate in eastern waters the three battleships of the "Maine" class, together with the "Alabama" and "Kearsarge," that we were able to stem the tide of disaster by winning a signal victory off the German base at Kiao Chau. After our success in the Pacific, there was another long delay, pending the arrival of two battleships of the "Maine" class from the Far East by way of Cape Horn. Had the Panama Canal been in existence, we could have concentrated a force off Havana which would have insured the early destruction of the German fleet in the West Indies; and the victory that was ultimately secured would have been more decisive than it was.

THE SUBMERGED TORPEDO TUBE.—The second lesson of the war is the enormous value of the submerged torpedo tube on battleships and cruisers. The majority of the German vessels engaged were fitted with a submerged tube located on the longitudinal axis of the vessel, at the point below water where the fore-foot rounds up into the ram. The German naval constructors were early to perceive the immense advantage of the submerged torpedo tube and all of their latest ships, both battleships and cruisers, have been so fitted. Our own vessels, unfortunately, did not carry a submerged tube, and the above-water tubes, because of the great risk of the explosion of the torpedoes by the rapid-fire guns of the enemy, had been in many cases removed, leaving our ships with at best only a very limited torpedo armament. This disparity not only seriously hampered the American admirals in the disposition and handling of their vessels, but in some battles it proved the undoing of our fleets. In a cruiser engagement that took place in the Atlantic early in the war, the issue was suddenly decided by a swift movement of the German cruisers, which enabled them to torpedo four of our cruisers in succession, the German boats being able to cross in front of our line at sufficiently close range for using the torpedo, without being themselves exposed to torpedo attack. In the whole war we lost, by torpedoes fired from the warships themselves, no less than eight battleships and cruisers against a loss to the Germans in battleships and cruisers by torpedoes from our own ships, if we exclude the submarines, of only one cruiser.

TORPEDO BOATS AND DESTROYERS.—The torpedo boat, moreover, fully established itself as a most effective element in modern warfare. In the battle off Manila early in the war, after our fleet had been thrown into disorder, the German torpedo boats were sent in to give the final *coup de grace*, which they did by sinking three battleships and two monitors. Then again, in a night action between two approximately equal fleets of cruisers and torpedo boats (in which, because of a similar ruse adopted by each fleet, each group of torpedo boats was enabled to get in among the enemy's ships) the entire force on both sides was wiped out, every cruiser and all the torpedo boats but one being torpedoed and sent to the bottom. Extraordinary as this result appears, it was considered by the umpires that under the tactics adopted it was perfectly possible. In this conflict alone ten cruisers were sunk by torpedoes, besides a dozen or so torpedo boats.

MONITORS IN ACTION.—The war served to demonstrate once more the comparative uselessness and, under certain conditions, the absolute encumbrance of monitors, when they form a part of the line of battle. On more than one occasion the speed gage remained with the Germans because of the obligation that the American admiral was under to keep down the speed of his battleships to that of the slow monitors. This was one of the contributory causes to the defeat at Manila; and although in the last fight of the war, as described in the current issue of the SUPPLEMENT, the monitors proved to be extremely hard to hit, and although their 12-inch guns did frightful execution upon the German battleships, it is a question whether the small target that they afforded was not more than offset by their comparative unhandiness and lack of maneuvering ability. Furthermore, it is a fact that in this battle, while the German line was moving at an uniform speed of 15 knots, our own line, because of the slowness of the monitors, was moving only at a little over 7 knots an hour, or only half as fast.

SUBMARINES.—In the great deciding battle of the war, victory was snatched from the German fleet by the sudden entrance of the submarines into the fight at the very moment when the remaining German ships were closing in, themselves badly disabled and with speed greatly reduced, for the closing stroke. This result will naturally be very pleasing to those who pin their faith to the submarine; but it must be remembered that their effective work was due to most favorable weather conditions, for the day being particularly fine, and the sea smooth, it rendered the successful operation of the submarines possible. Moreover, these same weather conditions were distinctly favorable to the monitors, which, had the sea been rough, could never have concentrated such an effective fire as they did against the German line.

GUNNERY.—Although the American navy was conspicuously weak in torpedo attack, the greatest credit is to be accorded to its gunnery, which proved almost as destructive to the German fleets as the German torpedoes did to our own. To the concentration of fire from our heavy guns is to be attributed the loss of two German cruisers and of six of the finest of the German battleships, in our victorious action off Kiao Chau; and in the successful battle that closed the war, it was the terrific mauling received by three battleships, the "Wettin," "Mecklenburg," and "Woerth," that rendered them easy objects of attack at the close of the battle by our submarines. As far as our own ships are concerned, we lost six cruisers and five monitors, as the direct result of gun fire, the vessels being either sunk, or so completely disabled that they were obliged to strike.

SPEED.—There can be no question that the possession by the Germans of the speed gage in certain of the conflicts of the war was of enormous advantage; and it was only when matters were evened up in this respect, in the battle won by us off Kiao Chau, a victory due largely to the good speed of the "Maine," "Missouri," and "Ohio," that we were able to turn the tables and maneuver to good effect. If the lessons of the war teach anything, they teach the folly of building battleships or cruisers whose speed is below the average speed of any possible enemy. Eighteen knots should be the lowest contemplated speed of our future battleships; and it is quite a question whether it will not prove to be an advantage to sacrifice some weight of gun fire for the sake of an additional knot of speed. The admirals on both sides seem to have aimed at placing their line of battle in a position which would enable them to concentrate the whole fire of the fleet on the head or tail of the enemy's line, disabling his ships in detail; and such a feat is only possible to the fleet which has a higher average speed and general greater mobility.

ENORMOUS PERCENTAGE OF LOSSES.—Perhaps, after all, the most striking fact brought out by this war game is the frightful diminution of naval strength and international standing which will occur in both of the navies engaged. Out of a total of 49 ships engaged, Germany lost about a score, in which were included the very finest of her battleships; while out of the total of 53 vessels engaged on the American side, we lost no less than 29. While our loss was numerically greater, we did not lose so large a number of our best ships. The exhausted condition of the combatants at the close of the war is shown by the fact that, although the umpires decided that the advantage lay with the American navy, the mutual destruction had been so terrific that the German navy had but one effective battleship left and the United States but two; that is to say, there were in the combined fleets but three first-class battleships left at the close of the war, that were in condition to carry on the conflict. Consequently, two of the first-class navies of the world were reduced in a few months to a second-class position as regards their fighting strength; and since the work of battleship building is slow, it would take at least four or five years to bring these navies up to their strength at the opening of the war, and probably twice that length of time to restore them to their relative standing among the other great navies of the world.

Here is a consideration which we think must make very strongly for peace in all future international controversies. When the defeat of an enemy is attained at such a frightful cost and at such peril to international ranking, we look to see the very last resources of diplomacy exhausted before any war takes place between the leading powers.

VERTICAL TRANSPORTATION.

In considering recently the general subject of transportation, attention was called to the congested conditions of travel in a crowded city like New York, and especially to the fact that much of the discomfort arising therefrom is due to the immense increase in population within restricted areas, both in the residential and business portions of the city, which render the congestion at certain hours of the day so serious as to render travel in the city a struggle not always unattended with personal danger. This increase of population is due to the growth of our cities in a vertical sense—in the residential part of the city, by the erection of "flat" or apartment houses, a score of stories high, and in the business district by office buildings which have a height so great as to engulf in many cases even the steeples of neighboring churches. In the primitive town the one and only street was laid out horizontally. In the modern city the streets are often vertical. In a modern community like the Park