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NEW YORK, SATURDAY, JANUARY 10, 1903.

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.

RAILROAD ACCIDENTS HERE AND ABROAD.

The truly horrible head-on collision that occurred a few days since in Canada, in which twenty-eight people lost their lives, serves as a shocking reminder that in the matter of safety of railroad travel we have a great deal to learn on this side of the water. Nor is it to the point to argue that because a railroad passenger has to travel so many million miles before his single chance of being killed comes round, railroad travel is as safe as it can be made. The true test of perfection of our railroad safety appliances is to compare our accident statistics with those of some other systems—to take the highest standard of attainment, and endeavor to live up to that. During the past year on all the railroads of the United States, 167 persons were killed in railroad accidents (collisions, derailments, boiler explosions, etc.) and 3,586 passengers were injured. During the same period on British roads not a single passenger was killed and only 476 were injured in railroad accidents. If it be argued that we have nearly 200,000 miles of track in this country as against 22,000 in Great Britain, it must be answered that the liability to railroad accidents increases with the density of traffic. That is to say, the risks of collision, etc., are greater the greater the number of trains that pass over a given stretch of line in a given time. Now, here again statistics prove that the density of traffic over English roads is far greater than that over our own, so that when we have taken this into consideration, we find that the difference in safety of travel is even more marked than the mere statement of the relative total number of persons killed and injured would suggest.

Our railroads have done much of late years in the way of introducing the block signal system, and yet, as was stated recently in our Transportation number, out of nearly 200,000 miles of track, not more than 25,000 miles or about one-eighth is so equipped. Two of the most prolific causes of accident are the use of single track for trains traveling in opposite directions (it was on single track that the recent collision occurred) and that most unreliable system of safeguarding a stopping train by sending back a rear flagman. The first condition we can only hope to remove gradually as the increase in density of traffic warrants the laying of double track; but it is obvious to the most unobservant passenger upon our railroads that, half the time, rear-flag safeguarding is worth very little in protection against rear collisions. Too frequently when the stop occurs the brakeman is engaged at his duties forward in the car and there is a loss of time before he can find his lantern or pick up his flag, reach the rear of his car, drop off, and proceed a reasonable distance down the track. The chance of his being unable to catch his train, if he proceeds back too far, is a natural inducement to the flagman to limit the distance between himself and the rear of his train, a tendency which very effectually defeats the object for which rear flagging was instituted.

One reason of the remarkable immunity from accidents in Great Britain is the fact that the matter of safety appliances is regulated by the Board of Trade under the able presidency of Colonel York, who has made a life-study of his task; and because of the absolute powers conferred upon him, the risk of injury has been reduced to a minimum, and, as the result shows, the risk of death was last year absolutely eliminated. If American railroad men are asked to explain the difference in results between the two countries, they point to the fact that in Great Britain signalmen, and railroad employes generally, remain in the service of the company and at one particular class of work for many consecutive years of service, and, consequently, attain remarkable skill and accuracy. Traffic conditions in Great Britain, moreover, are less variable, whereas in this country the volume of traffic varies greatly with the season of the year, and during the rush attendant on the moving of western crops, for instance, it is necessary to take on a large number of temporary employes whose services are discontinued when the rush season is over. Moreover, there is no

question that the sanctity of human life is held very much more sacred abroad than here. We are, or seem to be, willing, for the sake of lower cost and larger profits, to take those risks of life and limb whose results are seen in the long list of injuries and fatalities that are a conspicuous feature of our annual railroad statistics.

PROPOSED INCREASE OF OUR NAVY.

It was inevitable that the present international complications over the Venezuelan affair should very forcibly direct the attention of the people of the United States to the question of the present strength and needed increase of the navy. It was just seven years ago that the affairs of this South American republic involved us in a very definite announcement of the Monroe doctrine, and contemporaneously with that incident it was brought home to the people of the United States that to maintain the position so definitely stated, it would be necessary for us to possess an adequate naval force. Even stronger argument than this was afforded by the Spanish war, which bequeathed to this country some widely-scattered foreign possessions, and rendered us vulnerable to foreign attack, where, before the incident, we might, by virtue of our isolation, have considered ourselves practically secure. It has been the invariable experience in the history of this country that naval appropriations can only be secured, or secured in adequate degree, under the menace of such international complications as are too obvious to be overlooked.

In view of the fact that the present Congress will probably deal with a liberal hand in granting naval appropriations, it becomes increasingly necessary to make sure that the ships authorized are of the type that is most pressingly required. While keeping a watchful eye upon the trend of design among foreign navies, and incorporating the best elements of these designs, we should, above all things, have an eye to our particular necessities—to the nature of the duties which will be required of our ships in view of the altered international conditions brought about by the two Venezuelan incidents and by the Spanish war.

When we commenced the construction of our new navy, we held no possessions not included within our Atlantic, Gulf and Pacific seaboard, and hence our first battleships of the "Oregon" type were very properly designed as "coast-defense" vessels. They were of moderate size, and coal-carrying capacity and speed were sacrificed to extremely heavy armor and armament. We had no designs on the sea coast or foreign possessions of other nations; and we wished to possess a naval force that should suffice for duties of a purely police or protective character. To-day, however, we find ourselves in close commercial and military touch with the whole world. Porto Rico to the east, Honolulu and the Philippines to the west of us, lie exposed, by virtue of their insular position, to the attack of any future enemy. Should it be our misfortune to be involved in another naval war, our battleships and cruisers can no longer elect to lie within easy reach of coaling stations, drydocks or repair yards. They must be prepared to steam far and fast, and arrive at a distant field of conflict with a reserve of fuel in their bunkers, and with a large enough ammunition supply to enable them to fight a successful engagement without having to steam back to some friendly port to replenish coal bunkers and ammunition rooms. At the same time it is desirable that our ships, when they meet the enemy, should be able to steam at a uniform speed, maneuver with equal facility, and present, ship for ship, an overwhelming superiority both for attack and defense.

Fortunately, in our latest battleships and cruisers of the "Connecticut" and "Tennessee" type, we have vessels which amply fulfill these conditions. Ship for ship they are probably more powerful than those of any other fleet. They carry an unusually large supply of ammunition and coal, and their speed, while not so high as that of some of the latest foreign ships, is, we think, ample for carrying out the naval policy outlined above.

When we come then to the question of the immediate needs of the future, we think that Congress cannot do better than authorize a certain number of battleships and cruisers of the exact type of these, our latest designs. To insure this desirable uniformity, or in other words, to insure that we shall possess at least one homogeneous fleet of battleships and another of cruisers, every vessel in each fleet being identical with the others, it would be well for Congress to follow the admirable German method and authorize an extensive shipbuilding programme to cover a certain number of years. A total number of ships, say a dozen battleships and eighteen or twenty cruisers, should be authorized at once, with the understanding that a certain proportion of these, say two battleships and three cruisers, are to be laid down each year, and the money necessary for that year's construction voted regularly for the purpose.

Only by such a method can we insure, first, that our

navy shall grow by regular increments, and not by spasmodic effort; and secondly, that the ships as they are completed, shall form homogeneous fleets with the material advantages which are to be secured by such homogeneity.

TRAFFIC CONGESTION IN MANHATTAN.

In the public agitation over the congested condition of street-car and elevated-railway travel in the city of New York, it is difficult to secure a dispassionate expression of opinion from those who have suffered from the present intolerable condition of things. As between the traveling public on the one hand and the transportation companies on the other, it should be remembered that there is something to be said on both sides. That the present crowding is dangerous, distressing and productive of an enormous loss of valuable time; that it is irritating to the men and positively humiliating to the women passengers, no one who has witnessed the crowding during the recent holiday season in Manhattan and Brooklyn can for a moment deny. At the same time it is but just to the two transportation companies concerned, namely, the Metropolitan Street Railway Company and the Manhattan Elevated Company, to remember that the trouble has arisen just at the very time when both corporations were spending vast sums of money either in the enlargement or the reconstruction of their systems. The Metropolitan Street Railway Company has been steadily engaged for four or five years past in abolishing horse cars and equipping its lines with electrical traction. The Manhattan Elevated Company is in the midst of installing electrical traction on all its lines, and had this equipment been completed before the advent of the holiday season and the winter storms, the company would have been able to handle the crowds that flock to its lines with reasonable dispatch and comfort. Add to these facts that the travel in New York city is increasing by leaps and bounds, and we think that even the most aggrieved patrons of the roads must admit that there is something to be said on the side of the Manhattan companies in extenuation of the present congestion.

At the same time the companies must remember that the traveling public of New York that is now clamoring so loudly for redress is, and for years has been, known as the most patient and long-suffering in the world. Visitors from the metropolitan cities of Europe have time and again expressed their astonishment at the uncomplaining way in which the New York traveler endures the inconveniences of travel in the city. This being so, it may be taken for granted that when the public does give voice to its grievances with a unanimity and earnestness such as characterize the present agitation, it does so because it has very good reason to believe that the conditions are much worse than they need be. Now, while it cannot be denied that the transportation companies are doing a great deal to accommodate the growing traffic, we are also satisfied that they could, in some respects, do a great deal more.

In the first place, the demand of the citizens that a larger number of cars or trains be run between the rush hours of travel is a perfectly reasonable one. If there were a more frequent schedule during the late morning and early afternoon hours, there is no question that many of the traveling public would delay their entrance to the city, or hasten their exit, who now prefer to avail themselves of the more frequent service of the rush hours. There is absolutely no excuse for crowded cars between the rush hours. The policy of the companies has been apparently to reduce the number and frequency of trains or cars between the rush hours to a point at which these cars shall be filled not merely with seated, but with standing passengers. For this they should be called sharply to account. The public is fully justified in its complaint before the Railroad Commissioners against the too great reduction in the train service which takes place during this part of the day.

It is claimed by the management of the two roads that the frequency of cars in rush hours is governed by the number of cars that can pass certain intersecting points, or junction points on their systems in a given time. One of these points is at the intersection of the Broadway and Sixth Avenue surface lines at Thirty-fourth Street. In a conference between the Metropolitan Street Railway Company and the chairman of the Merchant Association's Committee on Franchise and Transportation, the committee made the very sensible suggestion that to avoid this intersection of traffic, north-bound Broadway cars should be turned into Sixth Avenue and north-bound Sixth Avenue cars into Broadway at Thirty-fourth Street. It is probable that at other points of intersection on both elevated and surface lines, re-arrangements of travel having a similar object in view, could be made. Another reform by which the frequency of trains and cars could be considerably increased would be by sandwiching in more short-distance trains among those which run the full length of the city. It is true, some sandwiching

is done at present; but there could be more of it done, especially on the Sixth Avenue lines as far as Fifty-eighth Street, and on the Third Avenue line, say as far as Forty-second Street. To give an example, a few years ago, a car starting from Fifty-eighth Street for the downtown journey, arrived at Forty-second Street with ample capacity for taking on the Forty-second Street passengers; while to-day these cars are almost as crowded as those that have come down from Harlem. Yet the interval between cars at Forty-second Street is amply sufficient to allow of doubling the number of trains that are started from Fifty-eighth Street even in the rush hours. This is but one instance, which doubtless could be duplicated at other points on the elevated system. Considerable relief would follow the construction of a third track on the Third Avenue Elevated and the running of express trains on the Second Avenue line.

The management of the Metropolitan Street railways have complained, and with very good reason, that a prolific cause of the crowding of the cars on the main thoroughfares is the interference of trucking with the running of cars. Nobody can deny that this is to-day a most serious obstruction on such a thoroughfare as Broadway. To prove the point it is merely necessary to imagine Broadway cleared of all trucks, and it is easy to see that instead of crawling along at an average speed, below Fourteenth Street, of say three miles an hour, the cars would readily make from nine to twelve miles an hour, and the increased speed would mean, of course, an increased number of cars passing a given point in a given time. It is not an uncommon sight to see a truckman leisurely driving his team on the car tracks with four or five cars held up behind him, and holding to these tracks until he reaches some particular street down which he wishes to turn. The Merchant Associations have requested that there should be proper police regulation of trucking and traffic on all car line streets. We do not know what the limits of authority of the police are at present, but if they can be extended, they should be to the very limit. Truckmen, cabmen and other drivers should be liable to penalty if they monopolize the street car tracks longer than is absolutely necessary for passing around a stationary or slower-moving vehicle in front. Moreover, as far as is consistent with the necessities of merchants living on Broadway, trucking should be restricted by law to the adjacent streets on either side. While we do not for a moment suppose that restrictions of this kind will entirely solve the difficulty, they will unquestionably assist in easing the congestion. Indeed, as regards the whole question affecting Manhattan in general, it may be said that relief is to be sought rather in a multitude of minor changes than in any panic legislation, which might be liable to defeat the very object at which it is aimed. Meanwhile we repeat the warning which was published in these columns a week or two since to the effect that unless *immediate* steps are taken for the construction of other Subway lines, north and south of Manhattan, we shall be confronted within three or four years with a congestion compared with which the present troubles will be mild indeed. In conclusion it must be admitted that in view of the present deadlock, the question of the construction of additional express elevated structures on the extreme eastern and western avenues of the city demands serious attention.

THE GERMAN-AMERICAN WAR GAME.

How thoroughly the various navies of the world study, and keep in touch with, the naval situation in other countries than their own, is shown in the latest events of the German-American conflict, which is now being played under the rules of the naval war game by officers of the British navy. In the last meeting, as described in the current issue of the SUPPLEMENT, a most important feature of the naval situation was that the American fleet in European waters was on its way, by the Suez Canal route, to the protection of the Philippines, with a more powerful German fleet bound hot-foot for the same destination. In view of the superior power of the German fleet, the admirals representing the American navy wished to dispatch the powerful North Atlantic squadron to join the European squadron in the Philippines, so as to present a combined force superior to that which Germany could gather. The umpires of the game, however, disallowed the move, and insisted upon the North Atlantic squadron being maintained off the Atlantic coast for the defense of the Atlantic coast cities. When the admirals of the American fleet protested, urging that it would be good strategy to make the move, the umpires replied that the force of American public opinion, particularly in the seaport cities, in favor of retaining the North Atlantic squadron for their defense would be so powerful that the Atlantic fleet would be kept in home waters, at least until the monitors could be suitably placed for their defense. Evidently the umpires had studied the conditions that existed during the Spanish-American war, when our Atlantic cities were clamoring so loudly for protection, that the old iron monitors of civil war

times were resuscitated and distributed for seacoast defense. The umpires decided that at least three weeks must elapse from the opening of the war before the North Atlantic fleet should be allowed to sail for the Philippines. The necessity for maintaining it on the home station was found in the existence of a German home squadron composed of the "Brandenburg" coast defense battleships, and some powerful battleships of the "Kaiser Wilhelm" type.

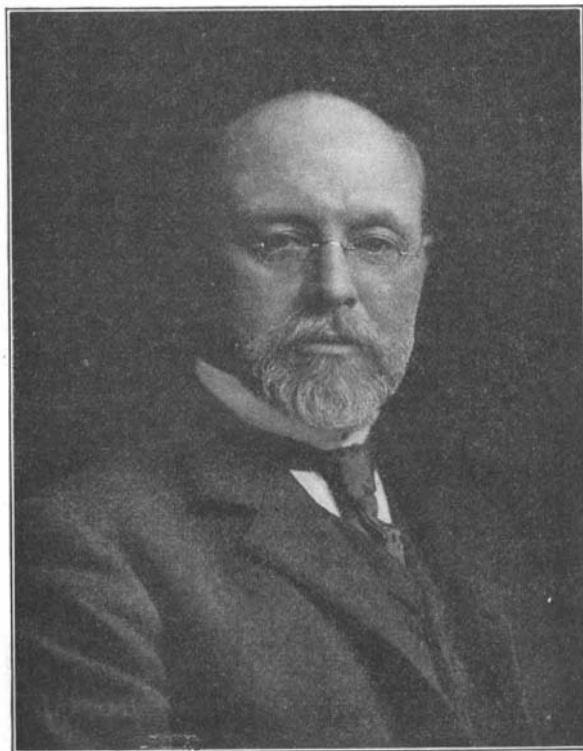
PROF. IRA REMSEN, PRESIDENT OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

BY MARCUS BENJAMIN, PH.D.

For the first time since the civil war, the American Association for the Advancement of Science has held a winter meeting. This meeting was the fifty-second meeting of the Association and was held in Washington. The retiring President, Professor Asaph Hall, famous for his discovery of the moons of Mars, at that gathering yielded the chair to one who has been honored by the Association in consideration of his researches in the domain of chemistry.

Ira Remsen was born in New York city on February 10, 1846. He studied for a time at the College of the City of New York, and then entered the medical department of Columbia University, where he was graduated in 1867. He then went to Germany and entered the University of Munich, where he devoted his attention chiefly to the study of chemistry, and a year later passed to the laboratory in Göttingen, where, in 1870, he received the degree of Ph.D. On the invitation of Professor Rudolph Fittig he went to Tübingen, and for two years continued as assistant in the chemical laboratory of that university.

He returned to the United States in 1872, and was promptly called to the chair of chemistry and physics



Ira Remsen

in Williams College, remaining there four years. On the organization of the Johns Hopkins University in 1876, he was invited to the chair of chemistry of the new university, and has since continued in that place. He organized the chemical department, and since, with facilities that are not excelled in the United States, has directed the many chemical researches that have emanated from the Johns Hopkins laboratory.

Notwithstanding the very great amount of executive work that has devolved upon him, he has nevertheless still found time to do much original work himself, which may be summarized as follows:

1. Oxidation of Aromatic Substitution Products.—This investigation showed that the position of an oxidizable group in an aromatic substitution product has much to do with the effect of oxidizing agents upon it. When such a group is in the ortho position with reference to some negative group that is not oxidizable, it is not materially changed by the action of acid oxidizing agents; while the same group in the meta or para position is easily changed by such agents. This protective influence of negative groups in the ortho position was tested in a large number of cases, and although a few apparent exceptions were brought to light, the influence was clearly established. Later work by Victor Meyer showed a similar effect in the case of esterification, and still later work in the laboratory of the Johns Hopkins University showed that a similar protective influence is exerted in the action of hydrolyzing agents on acid amides.

2. The Sulphinides.—These bodies form a new class of compounds with interesting chemical and physical

properties. The best known member of the class is the substance that is popularly known as saccharin. This has come into extensive use on account of its intensely sweet taste. Some members of the class are extremely bitter. Others are both bitter and sweet. The chemical properties of the substances have also been shown to be of considerable interest.

3. Double Halides.—These were for many years regarded as molecular compounds. The investigations on this subject have made it clear that they are analogous to oxygen salts, and that in them two halogen atoms acting together play the same part as an oxygen atom in the oxygen salts. This relationship is now recognized by all who have occupied themselves with investigations in this field, and by chemists generally.

4. Decomposition of Diazo Compounds by Alcohol.—This series of investigations led to conclusions at variance with those that had been previously held. The alcohols have been shown to act in much the same way as water in most decompositions of diazo compounds, the normal product being in each case a phenol ether, though in some cases, which are exceptional, hydrogen is substituted for the diazo group. This was formerly supposed to be the normal reaction in such cases.

His scientific attainments have frequently led to his services being sought for as an expert in cases of unusual importance. In 1881, he was invited by the city council of Boston to look into a particular condition of the city water, which was unfit for use, owing to a disagreeable taste and odor. Dr. Remsen showed that the trouble was due to a large quantity of fresh-water sponge in one of the artificial lakes from which the water was drawn. He was also intrusted with special researches by the National Board of Health, including "An Investigation of the Organic Matter in the Air" and "On the Contamination of Air in Rooms Heated by Hot-Air Furnaces or by Cast-Iron Stoves."

The exceptional ability shown by him in the care of the department under his supervision led to his being appointed vice-president of the university, and frequently, during the absence of Dr. Gilman, he served as acting president. In June, 1901, he was chosen to the presidency of the Johns Hopkins University, in succession to Dr. Gilman, which place he still holds.

Dr. Remsen founded the American Chemical Journal in 1879, and has edited that periodical ever since. He has also found time to prepare a valuable series of text books. These began with his translation of Fittig's "Organic Chemistry" (Philadelphia, 1873), which was followed by "The Principles of Theoretical Chemistry" (1877); "Introduction to the Study of the Compounds of Carbon, or Organic Chemistry" (1885); "Introduction to the Study of Chemistry" (1886); "The Elements of Chemistry" (1887); "A Laboratory Manual" (1889); and "Chemical Experiments" (1895). Of nearly all of these several editions have appeared, and translations into German and Italian have been made of them.

The degree of LL.D. was conferred upon him by Columbia in 1893, and by Princeton in 1896, and since 1882 he has been a member of the National Academy of Sciences, of which organization he is now foreign secretary. He is also a foreign member of the Chemical Society of London, and an honorary member of the Pharmaceutical Society of Great Britain. A year ago the American Chemical Society, recognizing him as a worthy successor to Draper, Lawrence Smith, Genth, Chandler, and other distinguished chemists, chose him as their president, and this year he will deliver a retiring address before that body.

His connection with the American Association began with his election at the Portland meeting in 1873. Two years later he was made a fellow, and in 1879 he presided over the chemical section at the Saratoga meeting, presenting on that occasion, as his retiring address, a strong appeal for the study of organic chemistry, in which he contended that in the educational institutions in this country the pursuit of that branch of chemistry had been sadly neglected. Since then he has been a frequent attendant at the meetings, and his interest in science was recognized at the Pittsburg meeting by his elevation to the presidency of the largest of the American scientific organizations.

Further Marconi Transatlantic Messages.

On December 28 Marconi published the text of some messages sent across the Atlantic between Table Head and Poldhu. The messages were addressed to the Queen of Italy, Sir John Lane, Heniker Heaton, and the Italian Minister of Marine. They were all New Year's greetings.

The first allotment of grants by the Carnegie Institution, which has been endowed by a gift of \$10,000,000 from Andrew Carnegie, has been made to Prof. Atwater to enable him to continue his investigations with the Wesleyan calorimeter. The trustees of the Carnegie Institution have also made awards to Yale University. The departments of the university which are to be benefited are those of paleontology and psychology. The work of Prof. Marsh in the former and of Prof. Scripture in the latter has undoubtedly done much for Yale.