

# THE DISMAL PROSPECT FOR LIMITING ARMAMENTS

BY HECTOR C. BYWATER

[IN engaging in this controversy with Japanese authorities, the *Atlantic* is far removed from any spirit of hostility or of immediate apprehension. We merely wish the important facts in the case to be completely understood and so bring to the realization of the American public the quite obvious fact that, while the Washington Conference saved expense, it did not banish danger. Rivalry on the seas continues and will continue until the world statesmanship can adopt more comprehensive and more radical measures. Furthermore, our Congress, in casting our exclusion act in a needlessly offensive form, has, through gross neglect of the navy, placed our country in the attitude of a bully whose manners are without even the brute justification of strength.

—THE EDITOR.]

## I

RUMORS of a new Arms Conference are in the air. The British Labor Government is being urged, both by its supporters and prominent Liberal politicians, to respond to the gesture in this sense which the United States is supposed to have made. Great importance is attached in such circles to the resolutions which Congress added to the Navy Appropriation Acts for the previous and current years, empowering the President to approach foreign Governments with a view to further discussion on the restriction of naval combatant forces. So far, however, the MacDonald Cabinet has made no move, though it is composed largely of

men who, until they took office, had always fought tooth and nail against warlike preparation. The truth is that Mr. MacDonald and his colleagues have been long enough in power to realize the difficulty of translating their pacifist theories into practice. Idealism has had to bow before the inexorable logic of circumstance. Already this Labor administration has appropriated for armaments a greater sum than its Coalition and Unionist predecessors spent in any one of the first five years of peace. Against its will, it has been compelled to sanction an increase in the national air-force and the laying-down of a naval programme, which includes five cruisers and two destroyers.

Replying some weeks since to a question concerning the Government's attitude toward further naval limitation, the Premier hinted his doubts as to whether the time was ripe for a definite move, and quoted a statement by President Coolidge to the effect that action would not be taken by the United States until the situation in Europe had become more settled. It may be, however, that the Labor Government's hands will be forced in this matter by pressure from the outside. Probably half the members of his own party, with several score of Liberals, are importuning Mr. MacDonald to take the initiative by convening a new assembly of the Powers to discuss the armaments problem. A statement made in the House of Commons on July 31 by Mr. Ammon, Parliamentary Secretary to the Admiralty, suggests

that events are moving that way. Explaining that the attention of the Premier had been fully occupied during the last few months with international affairs, Mr. Ammon proceeded: 'But as soon as possible every step will be taken to call together something in the nature of an international conference to see whether we can arrive at an agreement on the reduction of armaments that might lead to eventual disarmament.' And later, in the same debate, when the question of developing Singapore cropped up again, Mr. Ammon added significantly: 'The Government would have something to bargain with in a conference if they were able to say that failing a satisfactory agreement being reached, however much they might regret it, they would have to go on with the naval base at Singapore.' So it is quite on the cards that the other four Powers affected by the original treaty of naval limitation may soon receive an invitation from the British Government to meet in conference again, for the purpose of amplifying that pact.

Most of those who have given careful study to politico-naval developments since the winter of 1921-22 feel dubious as to the prospects of a new Arms Conference. The conditions now prevailing are very different, they point out, from those which obtained three years ago. The Powers chiefly involved in naval competition at that time were the United States, Great Britain, and Japan. France and Italy stood by as more or less indifferent spectators. Dominating the whole position at sea was the formidable programme of battleship construction on which the United States was engaged. This scheme embraced sixteen capital ships of unique dimensions and battle power, the completion of which would have ensured American primacy in the strongest types of fighting craft. In

process of execution, though much less advanced, was the Japanese 'eight-eight' programme. This also embodied sixteen capital ships, individually rather more powerful than the American vessels. In the meantime Great Britain watched with growing uneasiness the rapid expansion of these two navies, for her own resources were just as rapidly dwindling. Shortly after the war, in a perfect frenzy of retrenchment, she had begun scrapping battleships right and left, until by the spring of 1921 there remained only the skeleton of that mighty Grand Fleet which for five years had exercised complete mastery over the seas.

Many of the vessels discarded were, no doubt, of a type verging on obsolescence, and their retention would not of itself have guaranteed the future preëminence of the British Navy. A new class of capital ship, based on the experience gained at Jutland, and designated the 'post-Jutland' type, had been evolved since the war, and against thirty-two vessels of this class, building and projected for the navies of the United States and Japan, Great Britain had but one. To replace her aging dreadnoughts with battleships of the new type seemed to be out of the question. The cost of construction had risen enormously — from \$15,000,000 per ship in 1914 to \$35,000,000 in 1921 — and her finances were in no condition to stand a new burden of this magnitude. Still, the sentiment of the British people was altogether opposed to the surrender of that supremacy at sea which they had grown to regard as their inalienable heritage. Exhausted by the war and its sacrifices, and staggering under a colossal load of debt, they were as yet unprepared to see the trident pass out of their hands. It is the writer's belief that if naval limitation had failed to materialize Great Britain would have contrived sooner or

later to recover her former lead. It would have required a superhuman effort of many years; but that she would have accomplished it in the end, few who know her history will be inclined to doubt.

## II

In the United States a perceptible reaction was setting in against prodigal expenditure on naval armament. By the beginning of 1921 popular enthusiasm for the great shipbuilding programme was on the wane. Owing to inadequate appropriations by Congress, most of the ships were in a backward state of construction, and it began to seem doubtful whether all of them would be completed. In the Navy itself influential voices were heard protesting against this lavish outlay on vessels which new methods of attack might soon render obsolete, if they had not already done so. Admiral W. S. Sims, U. S. N., whose wide experience naturally lent great weight to his views, publicly declared the battleship to have outlived its utility. This was the situation when President Harding went to the White House. But to cancel, or even to curtail, a naval programme on which large sums of money had already been spent, without gaining a *quid pro quo* of some sort or another, would have been unstatesmanlike and wasteful. The President and his Secretary of State saw in this half-built fleet of dreadnoughts a potent instrument of diplomacy. The original motive had been to secure for the United States, if not absolute supremacy in naval strength, at any rate equality with Great Britain; and the country at large, for all its declining interest in the matter, would not have approved the complete abandonment of this policy.

But could not the same goal be reached by other and less expensive

means? President Harding and Mr. Hughes thought it could, nor did events belie their judgment. Fully apprised of the predicament in which Great Britain found herself, faced as she was with the alternative of taking secondary rank at sea or risking insolvency in an effort to build up a post-Jutland fleet, they had every reason to believe she would welcome with eagerness any rational proposals for stabilizing the balance of naval power as between herself and the United States. To this end the coöperation of Japan would be essential, but there again the outlook was decidedly promising. Thoughtful Japanese were aghast at the prodigious growth of their defense budget, which in 1921 was absorbing not far short of one half the entire revenue. Naval expenditure, in particular, was advancing by leaps and bounds, although the eight-eight programme was still in an early stage of development.<sup>1</sup> What it would ultimately cost to complete they trembled to think. Trade was depressed in consequence of the slump which had followed the great war-boom; popular discontent with the cost of living and heavy taxation was becoming articulate, and indispensable public services were being starved in order to release more money for battleships. To Japan, therefore, an arrangement which would have the effect of halving her naval budget without detriment to the relative standing of her fleet could not be other than highly agreeable.

No opposition was anticipated from France or Italy, though one is forced to admit that the authors of the limitation scheme did not make sufficient allowance for the former's maritime interests and proud traditions. On the whole, however, the international situation in

<sup>1</sup> Of the sixteen capital ships included in this programme, only six had been actually laid down by the summer of 1921.

1921 was such as to justify the most sanguine hopes respecting naval disarmament by mutual accord. None of the Great Powers wished to be drawn into a ruinous dreadnought competition; all were anxious to avoid fresh commitments after the orgy of spending provoked by the World War. In fine, the psychological moment had arrived, and American statesmen were prompt to seize it.

Now let us review as briefly as possible the very different situation which meets the eye to-day. While the building of capital ships has all but ceased, scores of other and smaller fighting craft are constructing in the world's shipyards. The United States, which three years since was leading the world in the production of combatant ships, has practically dropped out of the running. The great programme which constituted her trump card at the Washington parley is no more. Her place has been taken by Japan, who now has a larger quota of tonnage in hand than any other Power, though France is not far behind her. Great Britain has authorized the first batch of new cruisers designed to safeguard her sea routes, which must be kept open if she is to live. It may not be long before she is driven, by the steady expansion of the French submarine flotilla, to adopt a counter programme of the requisite dimensions. Italy, which claims parity of strength with France in the Mediterranean, has recently laid down her first fighting ships of post-war design. The way is thus prepared for a new era of competitive shipbuilding, less costly, perhaps, than when the dreadnought was the unit of power, but just as liable to engender international friction.

Japan is vigorously exploiting the opportunity with which a somewhat liberal interpretation of the Washington Treaty has provided her. The

eight-eight programme is supposed to have gone by the board; actually, as we shall see anon, an integral and very considerable section of it remains, and is being proceeded with. In the last two and a half years she has laid down more vessels of war than the United States, Great Britain, and Italy combined. Thanks to the *status quo* agreement concerning Pacific naval bases, the political reaction of this Japanese activity is, so far, much less serious than it would otherwise have been. The American public, appreciating the vastness of the Pacific, does not as yet see cause for alarm in the imposing fleet of cruisers and submarines which Japan is building up. This process, however, is watched with less equanimity in Australia and New Zealand, where Japan is always regarded as a potential aggressor, and where a vigilant watch is kept on the growth of her navy. It was mainly in deference to the wishes of these Dominions that the late British Government undertook to develop Singapore as a major naval base. Already the repudiation of this scheme by the Labor Government has caused Australia to look to her own defense by ordering two big cruisers for the Commonwealth fleet. Nor is the new British cruiser programme unconnected with Japanese building activity. We seem, in fact, to be reverting to that pre-war condition of affairs in which the laying-down of a new warship by one Power automatically led to the building of another warship by a neighboring State. Compared with the old dreadnought rivalry, this new competition has begun on a modest scale; but the suggestive fact is that it *has* begun, and experience warns us to be prepared at any moment for a sudden acceleration of tempo. If, therefore, the movement is to be checked before it has gathered weight and momentum, now is the time to act.

But one looks in vain for any of the favoring circumstances which heralded the first Conference. Between most of the Powers concerned political differences of varying degrees of gravity have intervened. For example, it would be idle to pretend that Anglo-French relations have not deteriorated since 1921. At Washington, in that year, France definitely refused all such proposals for the limitation of submarines as were acceptable to Great Britain, though at that time there was a friendlier feeling between them than exists to-day. Since then France has embarked on a submarine programme of considerable dimensions; moreover, it was made clear by official statements during the debates in Chamber and Senate which preceded ratification of the Five-Power Treaty that France, in her present mood, would be averse even to discussing any further scheme of naval limitation. Yet without French coöperation it would be utterly futile to stage another conference.

And what of Japan? Until lately her newspapers were not unsympathetic toward the idea of extending the Treaty to include auxiliary ships, though they invariably stressed the 'special strategical requirements' which impelled Japan to maintain a powerful establishment of such craft; and with one accord they scouted the American suggestion that the 5-5-3 ratio be applied to vessels other than battleships. This indicates that Japan would not easily be persuaded into cutting down her auxiliary programme, though this would have to be done before naval strength in the Pacific could be regulated according to the Washington ratio. And, above all, in her present mood of bitter resentment at the exclusion of her nationals from the United States, she can hardly be expected to welcome proposals which would have the effect of still further reducing her naval armament.

However desirable or expedient it may have been on other grounds, the brusque action of Congress has probably wrecked whatever chance there was of extending the principle of naval limitation, at least for the immediate future.

### III

Finally, it is by no means certain that the United States and Great Britain are themselves in agreement with regard to the restriction of auxiliary tonnage. The original plan put forward by Mr. Hughes on November 12, 1921, aimed at reducing both navies to a common standard of strength. Absolute equality was demanded by the United States, in cruisers, submarines, and so forth, no less than in capital ships and airplane carriers. Would Great Britain have agreed to this if the matter had been pressed to a decision? She might have claimed, not without reason, that her unique dependence on sea communications entitled her to a higher ratio of cruiser tonnage than the United States, with its immense domestic resources, stood in need of. Unlike that country, Great Britain is not self-supporting in regard to foodstuffs and other essential commodities. If her seaborne trade were interrupted, even for a few weeks, her people would starve and her entire economic system break down. For her, therefore, the maintenance of open sea-routes is literally a question of life and death, and since the cruiser is the type of ship best adapted to the protection of those routes, it is more than doubtful whether she would, or could, accept a fifty-fifty ratio which would naturally be determined by the more limited requirements of the United States. At the same time we are assured by those in touch with official circles in Washington that the United States would agree to nothing less than parity with Great

Britain in cruisers as in all other types. If that be so it is difficult to see how a deadlock could be avoided at the very outset of a new conference. Nor should it be overlooked that serious differences of opinion on certain technical aspects of the existing Treaty are still outstanding. The proposal to renovate ships of the United States battle fleet has already led to representations by the British Government, which challenges America's right to increase the elevation of turret guns or convert coal-burning ships to oil-fuel, though American naval experts stoutly maintain that such changes would in no way contravene the letter or the spirit of the Treaty. This dispute, of which we are likely to hear more, is mentioned merely as a reminder that perfect unanimity between the two dominant Powers, which would be a condition precedent of success in a future Arms Conference, has yet to be achieved.

No doubt it is due to their appreciation of the considerations outlined above that President Coolidge and his advisers have not yet seen fit to act upon the suggestion of Congress with regard to the summoning of a new conference. On the previous occasion the chances of a successful outcome heavily outweighed the risks of miscarriage. Had it been otherwise the American Government, realizing as they must have done the serious consequences of failure, would hardly have taken the initiative. They could not have ignored the lesson of the abortive conferences at The Hague, each of which was followed by a substantial increase in the armaments of Europe. Just before the delegates assembled at Washington a leading London journal wrote: 'We have said all along, and we repeat now, that some definite agreement for the restriction of naval armaments must be arrived at before the assembly disperses. The very fact that

it has been convened is an admission that international rivalry in these armaments does exist. Failure to reach an agreement would, in all likelihood, intensify that rivalry, which might then become a grave menace to peace. The world's statesmen have taken a momentous step, which can only be justified by a successful issue.'

In so far as it halted competitive building in the most powerful warship types, and incidentally relieved a situation in the Pacific which contained elements of real danger, the first Conference was a signal success. On the other hand, it did nothing to improve relations between Britain and France. The unfortunate submarine dispute left an aftermath of bitterness which has never since been allayed. It may be that the formidable submarine programme on which France embarked so soon afterward would have been adopted in any event, though there are many who regard it as a direct sequel to the controversy at Washington. It is therefore devoutly to be hoped that before Mr. Ramsay MacDonald makes up his mind to call a second conference on armaments he will satisfy himself that the moment is well chosen, the political atmosphere favorable, and the prospect of success more than reasonably good. In no other sphere of foreign politics is hasty or ill-considered action more to be deprecated. Not by any means does it follow that, because Great Britain and the United States both desire to regulate the construction of auxiliary warships, all the other Powers are bound to fall into line. At this juncture of affairs it is necessary at all costs to avoid any line of action calculated to generate ill will between Great Britain and France. The latter is convinced that her interests were prejudiced by the proceedings at Washington three years ago; her attitude toward the

Five-Power Treaty is that of one who decides to make the best of a bad job. Her leading statesmen have declared repeatedly that they will not suffer her hands to be tied again in the matter of naval defense. If the most serious differences between French and British policy could be adjusted, if the German Reparations problem could be solved to the satisfaction of both parties, and if France received those guaranties for her future security by which she sets so much store — if all this could be accomplished she might then be inclined to lend a more sympathetic ear to proposals for mutual disarmament. But until these conditions are fulfilled it seems worse than futile to approach her on the subject. The almost inevitable result would be a fresh outburst of rage from those influential publicists who professed to see in the Five-Power Treaty a shameful betrayal of French interests and who all but succeeded in having it thrown out by the Chamber. Then would follow an agitation for stronger defenses at sea, culminating, perhaps, in a new programme of submarines and aircraft, the two French weapons of which Great Britain is most apprehensive. In face of such developments the Entente could not survive. A period of open antagonism might ensue, and Europe's last hope of pacification would vanish. Again, therefore, one must register a fervent hope that the British Labor Government's zeal for disarmament will not blind them to the dangers of precipitate action.

#### IV

As between the United States and Japan the issue is rather more simple. Apart from the immigration controversy there is not, for the time being, any acute political difference of opinion between Washington and Tokyo. The fact remains, however, that the trend

of Japanese naval policy in the post-Treaty period has aroused misgivings in the American mind. No one questions Japan's scrupulous observance of the letter of the compact. She undertook to scrap her battleship programme, and she has done so. She has also discarded the older ships which the Treaty required to be sacrificed, and she has discontinued the fortification of islands within the zone affected by Article 19 of the same agreement. What she has not done is to suspend the operation of her eight-eight programme so far as it relates to auxiliary naval craft. The result is that her force of such ships is expanding year by year, and the balance of power in the Pacific which the Treaty aimed to stabilize is thus turning steadily against the United States, whose fleet of auxiliary ships remains stationary.

The scope and significance of this Japanese auxiliary programme were discussed by the present writer in an article published in the *Atlantic* for February 1923. His purpose was not to disparage the fruits of the Washington Conference, but to show that Japanese action in continuing to build up a powerful fleet of secondary naval craft must eventually upset the ratios of international strength formulated by the Treaty. This article appears to have given offense in Japan, though the data it presented had been carefully checked, and the conclusions drawn therefrom were, in the writer's judgment, entirely justified by the premises. A detailed reply has since appeared in the *Far Eastern Review* from the pen of Rear-Admiral K. Nomura, a Japanese officer who was at one time attached to the Embassy in Washington and who served as personal aide to Admiral Baron Kato during the Conference. Describing the *Atlantic* article as 'the most potent because the most adroit of the several criticisms of the naval treaty

that have been offered,' he submits the following extract as a specimen of its supposedly tendentious character: 'To state the case in a sentence: Japan, by diverting to the construction of cruisers and submarines no small part of the energy she formerly expended on capital ships, will soon be in possession of a fleet of "auxiliary combatant" vessels superior in some respects to that of any other power. . . . Japan during the last five years has built or ordered no less than 23 light cruisers, as against a collective total of 16 for Great Britain and the United States.' Commenting on this, Admiral Nomura writes: 'The effect of this paragraph is to give a definitely erroneous impression. It is carefully worded, but seems deliberately designed to alarm where no alarm is necessary.'

That, of course, is no more than an expression of personal opinion by the Admiral. Since he does not attempt to dispute the figures mentioned in the statement, it is to be presumed that he accepts them as accurate. On his part he submits various tabular surveys of relative naval strength at given periods, one of which shows that Japan, by the end of 1927, will possess 28 cruisers of 171,055 tons, against 10 American cruisers of 75,000 tons, the ratios being 2.2 and 1 respectively. This position may be quite satisfactory to Japan, but the Admiral can hardly expect it to be viewed with equal complacency by the United States. He makes much of the circumstance that when the eight-eight programme of battleships was canceled, the complementary programme of light craft was also modified by deleting one cruiser, 13 destroyers, and 24 submarines, a total of 38 vessels. This seems at first sight a very drastic reduction, but what does it really amount to? We find that the canceling of these 38 vessels has involved a decrease of only 13,395 tons in the

original programme, equivalent to the displacement of two small cruisers. Such is the limited extent to which Japan has reduced an auxiliary fleet that was designed, in the first instance, to serve all the needs of a great battleship force. Since fourteen of the projected battleships were afterward dropped in deference to the Treaty, the tactical necessity for so large a number of ancillary craft ceased to operate, yet Japan has nevertheless continued building them up to within 13,395 tons of the original standard of strength, which postulated an aggregate displacement of 130,000. The net reduction is therefore only about ten per cent.

This disparity between the number of ships canceled and the diminution of tonnage is explained by the fact that all the surviving craft, from cruisers to submarines, have been redesigned on the basis of larger dimensions and greater fighting power. With regard to cruisers and destroyers, though the total number was reduced by 14, the sum of displacement was actually increased by 144 tons. In other words 32 ships of 102,000 tons are now building or on order, in place of the 46 ships of 101,856 tons projected before the Conference. Admiral Nomura seems to have overlooked the damaging significance of his own figures! So far from disproving the case presented in the *Atlantic* article, they confirm and strengthen it. Only in respect of submarines has any positive reduction been made in Japanese naval shipbuilding since the Treaty. Here we find a substantial cut in the programme, from which 24 boats of 13,539 tons have disappeared. The surviving 22 will all be of large design, and their completion four years hence will bring the Japanese underwater flotilla up to 69 units — ocean-going boats without exception, and all less than ten years old from date of completion. Numeri-

cally, and still more in the size and power of individual boats, this Japanese fleet of submarines will have no rival. Moreover, about thirty of the boats comprising it will date from the post-Treaty period. In view of Admiral Nomura's contention that Japan has strictly adhered to the spirit of the Treaty — which was framed to promote limitation of naval armaments and, above all, to discourage the construction of new fighting ships — the following table is instructive. It shows the number of auxiliary vessels of each type which the three leading Powers have begun and authorized since the Treaty was signed in February 1922: —

	UNITED STATES	BRITISH EMPIRE	JAPAN
Cruisers . . . . .	0 <sup>1</sup>	8 <sup>2</sup>	11
Destroyers . . . . .	0	2	32
Submarines . . . . .	3 <sup>3</sup>	1	30
	—	—	—
	3	11	73

Confronted with these arresting figures, the apologists for Japan will find it difficult to sustain their argument as to her loyal observance of the spirit of the Treaty.

In the *Atlantic* paper referred to, mention was made of the haste with which the fortification of the Bonin

<sup>1</sup> Eight U. S. cruisers are projected but not yet authorized.

<sup>2</sup> Includes five ships authorized by the British Government, two ships by the Australian Government, and one cruiser-minelayer begun in 1922.

<sup>3</sup> One or more of these U. S. submarines may have been commenced previous to the Treaty.

Islands was pushed on by Japan as soon as she knew the Washington Conference to be impending, her object being to put herself in a favorable position strategically before the negotiations began. Admiral Nomura denounces this statement as 'diametrically opposed to actual facts' and as 'a canard pure and simple.' But the information on which it was founded came from the Japanese press, which appears to have made no secret of the matter. Several of its newspapers published an account — reproduced in the *Japan Chronicle* — of festivities which were held at the Bonins in December 1921, to celebrate the completion of the fortifications there. Seeing that the Washington Conference was in session at this time, and that when the fortification plan was first adopted it was scheduled for completion by the end of 1922, it was a justifiable inference that the work had been expedited in order to strengthen Japan's hands at the Conference. Such, at least, was the conclusion reached by newspapers in that country. Admiral Nomura suggests that the writer's views 'are instrumental in provoking distrust of Japan, if not actually intended to do so.' The obvious retort is that nations, like individuals, are to be judged by their actions rather than by their words. The actions of Japan since the Washington Conference form a striking contrast to the lofty language in which her statesmen profess their devotion to peace and disarmament.

# THE CHIMERA OF MONOPOLY

BY AMBROSE PARÉ WINSTON

*'THROUGH control of government, monopoly has steadily extended its absolute dominion to every basic industry. In violation of law, monopoly has crushed competition, stifled private initiative and independent enterprise, and without fear of punishment now exacts extortionate profits upon every necessity of life consumed by the public.'* — ROBERT M. LA FOLLETTE

*'WE oppose the artificial supports of privilege and monopoly because they are both unjust and uneconomic.'* — CALVIN COOLIDGE

*'WE offer . . . a belief . . . in the suppression of private monopoly as a thing indefensible and intolerable.'* — JOHN W. DAVIS

## I

IN the great sea-fight at Actium when the combined fleets of Mark Antony and Cleopatra contended for the empire with the forces of Octavian, Antony's ship, it is said, unaccountably slackened speed and then, in defiance of the wind in its spreading sails, in defiance of hundreds of slaves bending to their oars, stood still. A diver, examining the hull, brought up a little fish of a variety which, according to general belief at that time, by attaching itself to a hull could hold the largest ship motionless on the water. Even to this day, in fact, it is a well-known species with a remnant of its ancient fame still perpetuated in the dictionaries by the name of *remora* (delayer) and in the zoölogies by the specific name of *naucrates* or conqueror of ships. This belief was not confined to the ignorant populace; it was entertained by the best intellects of that time, by Lucan in his *Pharsalia* and by Pliny the Elder, himself commander of a fleet as well as the most noted observer of animal life in the whole his-

tory of ancient Rome: 'What is more violent than the sea and the winds? What greater work of art than a ship? Yet one little fish can hold back all their fury and can hold back all these when they all strain the same way. The winds may blow, the waves may rage, but this small creature controls their fury and stops a vessel when chains and anchors would not hold her, and that it does, not by hard labor, but merely by adhering to her.'

A fable, so out of keeping with modern thought that no one would now believe it, found at that time no one to deny it, because in that age there was a universal failure to understand that physical energy is quantitative and measurable — that the great force of a large body is not to be controlled by a little thing and feeble, 'merely by adhering to' it. In contemplating the physical universe we have made appreciable advance, but it is possible that after some centuries the record of our thinking on social phenomena will be treated by the historian of science in