

of intercourse of economic barriers find that tolerance and goodwill offer themselves as potent co-ordinating agents for effecting economic as well as social adjustments.

In scheming for the future, one cannot fail to observe that vitally necessary for the bearer of the increasing economic, political and international burdens, which coming years will load on American shoulders, is a scientific broadening of education along lines philosophical as well as practical.

For "it is ruinous conceit and stupid chauvinism to imagine that the perpetuity of any state, be it monarchy or republic, can be assumed solely by industrial pre-eminence, superior armament, mastery in the technique of foreign and domestic commerce, or shrewdness in the conduct of international relations. Valuable assets these, but edged tools and engines of destruction unless controlled by minds liberalized by habits of self-analysis, comparison and reflection."<sup>8</sup>

There are basic principles involved in our citizenship demanding recognition far better than that accorded them. To illustrate, let us turn to an army drawn up for battle, for in trained armies and navies, particularly, there is found that powerful co-ordinating factor known as discipline, making for harmonious attainment of common purpose. Sound discipline, not requiring compulsion, has for its principles loyalty, self-control, self-denial and self-sacrifice—all and everything for the good of service, organization and country. In our industrial relations the Army and Navy constitute the reserves; the commercial and business organizations make up the shock troops. Willing co-operation in these latter organizations is accepted as an essential. But what constitute the fundamentals of co-operation? They are precisely the same as those mentioned above as the principles of the discipline practiced by the reserves.

The importance of loyalty, self-control, self-denial, self-sacrifice, demanded in military services and desired in every walk of national and industrial life, together with the value of tolerance, are all accentuated as human relations become closely articulated. Ability to balance the human appeals of ambition and modesty, of desire and self-restraint, of envy and unselfishness, is a scholastic need of youthful citizenship. Stressing now the teaching of the elements of co-ordination in every home would be a constructive move in the direction of scientifically good management.

<sup>8</sup>Walsh, E. A., *The Fall of the Russian Empire*, New York, Blue Ribbon Books, Inc., 1931.

They are the fundamentals of accord, of religion, of society, of nationalism as well as of international comity.

Our standard of education, though in most respects the highest in the world, inadequately impresses the value of co-ordinated industrial economics. This is to be corrected. Education if well directed must proceed to awaken in the rank and file of coming voters a more unselfish interest in the governmental regulation of federal business and in the co-ordination of governmental action in accordance with international as well as national requirements. Education, by stressing the ability to co-ordinate the elements of one's own character while engaged in bringing together the abilities and activities of associates, develops leadership.

In closing, I, who have spent two score years in observing the trend of affairs in various quarters of the globe, may be pardoned for expressing other views of the organized "reserves" than that held by a writer who recently gave the country's two great public schools of nationalism, the Army and the Navy, a proud position in a list of "wastes" in advance of that occupied by "harmful drugs, narcotics, and patent medicines."<sup>9</sup> The day of the soldier and the sailor is not done, for peaceful international co-ordination is an art, as yet in its infancy. Ever, unexpected shifts in economic conditions which could not be foretold, and assertion of national ambitions difficult to comprehend, have constructed troublesome obstacles in the paths of tribunals designed for the peaceful regulation of affairs.

The armed "reserves" normally have little encouragement to organize for the occasion when the nation's strength musters for compelling the co-ordination, refused to the diplomat or to a thoughtfully judicial body. Not uncommonly, near-sighted politics exercises demoralizing command and sometimes the principles, carefully taught to juniors, have been forgotten by those occupying positions of high responsibility. Then authority's vanity for decision and personal ambition have eliminated co-ordination from the picture.

For the two military services every-day opportunities are infinite for useful common endeavor, quietly, economically, progressively and efficiently promoted.

Co-ordination is the nervous action controlling economics—the fiber and sinew of community life. It is not to be confused with scientific management for it is the greatest of arts involving the placing and treat-

<sup>9</sup>Chase, Stuart, *The Tragedy of Waste*, New York, The Macmillan Company, 1925.

ment of complicated human mechanisms, not lending themselves to standardization as do machines, in ways best promoting health, contentment and prosperity.

Co-ordination is the elusive "dove of peace." When the extension of co-ordinated industrial lines has become world-wide and they carry, as the important part of traffic, an abundance of international goodwill and tolerance, the intensity of struggles on the advance lines will be reduced, and everywhere a sweeping reduction of the armed reserves will then have a strong and a logical appeal.

### Discussion

**King Hathaway.** I cannot tell you with what trepidation I attempt to discuss Admiral Craven's paper. My hesitation and qualms are due to the fact that I have a fair idea of the magnitude of the undertaking and of the difficulties and problems that Admiral Craven has so concisely indicated in his paper.

I disagree in some measure with Admiral Craven's final statement that co-ordination is not to be confused with scientific management. Perhaps "confused" is a term that I may have misinterpreted. Co-ordination, however, is one of the objectives, one of the purposes of scientific management; without co-ordination in an industry one cannot have scientific management. In industrial affairs it is, however, a relatively simple matter to bring about co-ordination because we can, far more easily than in public administration, tear down what exists and construct a plan of organization which facilitates co-ordination. We do that by shifting over from what Taylor referred to as "military organization" to functional organization. We can bring about not only a rearrangement of the organization but of the various departments and activities so as to avoid lack of co-ordination. Lack of authority, legal limitations and politics make the task more difficult in public administration; particularly in so vast an organization as our federal government, which employs something over half a million people and has an operating cost of some billions of dollars annually. It is pretty difficult to visualize an industrial undertaking of that magnitude, and I doubt very much if we should get very far were we to attempt to visualize it as a whole, as we do in the case of an industrial undertaking. It is too much like trying to visualize the universe. To a limited degree it can be done but we must finally get

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down to units and attempt within them to bring about co-ordination of activities.

A complete new set-up of governmental activity should be worked out along logical lines which would to a great extent automatically result in co-ordination of effort and the elimination of duplication and waste.

In an industry, the first thing that I attempt is to set up a classification of its activities, its expense, its function, regardless of what may exist at the time. In other words, I aim to set up an ideal plan of organization, not with the idea of bringing it about at one fell swoop but as something to work toward. It would be a very fine thing if that could be done for the United States Government, although it might take a century to bring about all the desirable changes that it would indicate. We cannot wait that long for results and so, of course, are constrained to do everything possible within the limitations imposed by an existing set-up.

I recall my own experience in bringing about co-ordination during the War when we set out in the Ordnance Department of the Army to organize a Supply Department, something which had not existed before as a distinct activity. There had been four divisions, each to a great extent a complete business in itself. One of them furnished the so-called equipment, such as harness, saddles, spurs, buckets and cartridge belts; another furnished guns, meaning cannon, together with their ammunition; another furnished carriages for the cannon, and the fourth supplied small arms and ammunition. We entered the War with each of these four divisions going ahead largely on its own program. The only co-ordination was supplied by one individual, the Chief of Ordnance. As a consequence we had in the early stages of the war enough of certain easily procurable material for an army of, say 1,000,000 men, whereas we had field artillery enough for less than one division, nor could we hope to have in the same period of time field artillery for more than that. We found that each of these divisions was in some measure competing against the others; that, as Admiral Craven indicated, we might have inspectors from two or more of those divisions going into the same plant in the same town, at the same time, to inspect material.

That set-up impressed me at the outset as being unsound, so, although it was none of my business at the time, I sketched out a plan of organization quite different but embodying the principle of co-ordination