trasting pigments, the boundary lines between the colours running uninterruptedly across boats, guns, turrets, etc. Of course, precisely the same principles apply to ships viewed through the periscope of a submarine, but in these early days of the war the submarine menace had not yet become insistent. The main principles outlined above were duly recognised by the Admiralty, one of my letters on the subject written in September being circulated to the Fleet early in November, 1914. Most unfortunately, their carrying into effect was left to the responsibility of the naval officers immediately concerned, without any scientific or artistic supervision. The result was a complete absence of system, and an effect in individual cases calculated to excite, according to one's temperament, derision or tears. In the summer of 1915 I was informed that the principle of parti-colouring had been given up, that the Admiralty had now arrived at a definite decision as to "the most serviceable scheme of colouring for H.M. ships," and that this scheme was one of *uniform* coloration.

I continued to press on the Government—incidentally making myself rather a nuisance to some of my friends—that a system of uniform colouring was *not* the right one, whether applied to ships or to service dress; that of all uniform colours the very worst, whether by day or night, was the black which was then still in use for destroyers, and so on. I also kept on urging that the only way of obtaining really satisfactory results was to place the whole matter of ship "camouflage" under the direction of one individual endowed with practical knowledge of the sea and ships, artistic sense, and grasp of the scientific principles involved.

At last, during the summer of 1917, I had the satisfaction of seeing the principle of parti-colouring come into its own. Discarded by the Admiralty as useless two years before, the value of the principle was now recognised and its application entrusted to skilled hands. Glaring defects which were at first conspicuous were remedied, and the later efforts, such as the great aeroplane-carrier, H.M.S. *Argus*, left little opening for criticism.

The importance of the subsidiary principle—that of compensative shading—as an aid in "camouflage" was, unfortunately, never fully grasped during the course of the war. The distinguished expounder of this principle, Mr. Abbott H. Thayer, was in the strongest sympathy with the cause of the Allies, and I think it a great pity that it was not found possible to enlist his practical help, which I feel sure would have been gladly and freely given.

It is only fair to state, in conclusion, that in my personal communications upon this subject I laid stress upon the use of parti-colouring as a means of rendering ships less conspicuous. I also directed attention to its use in confusing the details, especially vertical lines, which are made use of by the enemy's range-finders, but I did not lay sufficient emphasis on this. Actual experience has shown that in submarine warfare this second function—in particular, determination of the factor of relative movement—is of overwhelming importance. But this does not affect the main point I desire to make, namely, that the leading principle underlying ship "camouflage"—the breaking-up of the form of a vessel by strongly contrasting colours—is one familiar to biologists; that it was made known to the Admiralty in the early days of the war, although its carrying into practice was, unfortunately, bungled; and that consequently newspaper paragraphs which date the discovery of the principle, instead of the more efficient application of it, from the year 1917 are distinctly misleading.

J. GRAHAM KERR.

University of Glasgow, May 6.

A Possible Case of Partial Sterilisation in Soil.

WHEN on active service in France in 1918 I had, partly as a hobby and partly for food supplies, a garden on the site of an old brickyard. The land had been waste land for certainly three years, and I believe more. It received a light dressing of dung in February and was dug up in that month; seeds were got in in March. In April or May the land received by chance a light top-dressing of a mixture of charcoal and brick-earth impregnated with potassium carbonate and hexamethylene tetramine. The crops obtained were, in my opinion, abnormally good, and much better than those obtained by some French gardeners on cultivated gardens near by. The chief crops grown were potatoes, dwarf peas, and dwarf beans; the two last gave the best results in the order named. It is not asserted that the top-dressing brought about this result, as the history of the soil is necessarily rather obscure; and as it was not designed as a scientific experiment there was no control plot, but it seems improbable that the small amounts of nitrogen and potassium supplied by it could have made the garden much better than neighbouring ones.

The suggestion is offered that the hexamethylene tetramine may have liberated formaldehyde by the action of dilute acids in the soil and caused partial sterilisation.

I have since subjected to steam distillation (*a*) a solution of hexamine, (*b*) untreated soil, garden soil, and (*c*) garden soil moistened with hexamine solution. Schiff's reagent gave negative results in the case of (*a*) and (*b*), but positive results with (*c*).

F. KNOWLES.

The Midland Agricultural College,
Kingston, Derby.

MINERAL PRODUCTION IN RELATION TO THE PEACE TREATY.

IT is gradually becoming more and more clear, as the history of the Great War is further examined, that one of the main objects of Germany in attacking her neighbours was commercial aggrandisement by destroying rival manufactories and by appropriating the raw material of industry wherever it lay conveniently situated for that purpose, this raw material being in the first instance all available mineral wealth. She had already done this with supreme success in 1871; the iron-ore fields of Lorraine then wrested from France had formed one of the mainstays of Germany's industrial development, and she fully expected that the new war would yield proportionately valuable results. This was Germany's avowed policy; in the words of one of the acknowledged German authorities, Frederick Naumann, the object of a country nowadays in going to war is purely "to benefit the economic development of the country," and German writers have ever since the commencement of the war announced their fixed determination to retain in German possession the iron-ore fields of French Lorraine, thus giving Germany "the practical monopoly of iron-ore in Europe," and assuring her of victory in the future wars to which she was already looking forward.

Until the actual boundaries, as roughly defined in Sections II. and III. of the Peace Treaty, have been accurately settled, it is only possible to form