duced Japanese pearls, while the fact that culture pearls produced in other localities, or in other species or races of pearl oysters, will probably be indistinguishable from naturally produced pearls from the same sources is not mentioned.

It is a significant fact that the English pearl merchants and jewellers have apparently made no attempt to obtain and publish scientific opinions on the problems raised by the coming of the "culture pearl." This will probably prove in the end a shortsighted policy. It is quite likely that the values of the stocks of "natural" pearls which are held by merchants and others will suffer very much more from the uncertainty and confusion which are created by statements like those referred to here than they would have suffered from a full and frank explanation to the public of the exact nature, and probable future development, of the Japanese discovery. This discovery, important as it is as a scientific achievement, need not have produced the panic which, to judge from their behaviour, seems to prevail in certain sections of the precious stones trade. If at the outset the merchants and jewellers had acted as realists instead of behaving (and thinking they could induce the public to behave) in the manner so often wrongly attributed to the ostrich, it is quite likely that the pearl market would by this time have adjusted itself to the change. H. LYSTER JAMESON.

A Curious Physiological Phenomenon.

AT a recent meeting of biologists at Strasbourg Messrs. A. Schwartz and P. Meyer directed attention to the curious physiological phenomenon which is shown by the following experiment:—

With arms hanging relaxed, stand about 18 in. from any solid structure, such as a wall, and face the direction parallel to the wall. Stiffen the arm next the wall and move it away from the body until the back of the hand comes into contact with the wall; stand firm and press the wall as hard as possible with the back of the hand for about 15 seconds. Now relax the arm, step away from the wall, and this is what will happen:

To the observer's astonishment, his arm will slowly rise, without his making any voluntary effort, until it reaches an approximately horizontal position; it will remain there for a few seconds and then fall back. Whilst the phenomenon is taking place the observer has the sensation that his arm is raised by an exterior force which is quite independent of volition. Anyone interested in the explanatory theories put forward by the above-mentioned gentlemen should consult the *Comptes rendus de la Société de Biologie*, vol. 85, No. 27, July 23, 1921, p. 490.

F. C. DANNATT.

198 Rue Saint-Jacques, Paris (5e), November 28.

I FIRST came across this phenomenon in 1917, when it was shown as a "parlour trick" in an officers' mess in Macedonia. It is obviously of the greatest interest, but I was unable to trace it to its origin.

To the description in Mr. Dannatt's letter may be added the observation that the movement ensues even where the subject has no knowledge of what is about to occur—my first personal experience of the phenomenon occurred before I was told what to expect. This is of importance, for it removes possibility of "suggestion." The phenomenon is a physiological one.

Any explanation at present must be purely hypothetical. The "voluntary" movement of a limb is brought about through the activity of the "motor" area pyramidal cells in the cortex of the great brain. Such reactions (under experimental conditions) are often followed by the opposite form of movement—*e.g.* flexion by extension (Graham Brown and Sherrington, Proc. Roy. Soc., B, vol. 85, p. 250, 1912). But the peculiarity of the present movement is that it is in the same direction as the original one. That is, the upper limb is pressed against the wall in a voluntary manner; after a few seconds' rest it is raised towards the wall in an involuntary manner. After-discharge of the same movement may, however, also occur under experimental conditions (called "tonus remainder" by the above investigators). But this involuntary movement of the arm occurs after a distinct pause.

The curious lack of "volition" whilst the arm is rising might be explained (on the assumption that the movement is due to an after-discharge of the motor cortical area) if the feeling of voluntary fatigue depends upon functional changes a step back in the cerebral path. Thus the motor cells are set into activity by other nerve cells. If the fatigue of volition occurs in these other cells, and the after-discharge in the motor cells themselves, the absence of a feeling of "voluntary effort" might be explained.

The movement—the slow, involuntary rise of the arm—is, however, not like those obtained from the motor area of the great brain when it is stimulated. But it *is* like the movements obtained from another motor mechanism—that of the "red nucleus" and other structures in the mid-brain and hind brain. I think that the phenomenon is far more likely one brought about by this other motor system, which is essentially concerned in the slow "postural" movements and maintained postures of the body (Graham Brown, Proc. Roy. Soc., B, vol. 87, p. 145, 1913). It is more than likely that the two motor mechanisms combine in directing muscular activities—sometimes reinforcing one another, sometimes inhibiting. If this is the case, the pressing of the arm against the wall may be brought about by both mechanisms, the drop of the arm at the end of the voluntary act may be an additional voluntary act, and the after-discharge of the "red nuclear" mechanism (to give it a too restricted name) may later reassert itself. *Or* the "motor area" activity may from the first inhibit the "red nuclear," and when the former is "fatigued" the latter may assert itself in a "rebound" from its state of inhibition.

Enough has been said to indicate our ignorance of the conditions which might explain the phenomenon and to show how speculative any explanation must be at present. One last suggestion may be made. The phenomenon may be related to the curious maladjustment of movement which occurs after a heavy weight has been carried for a distance and then abandoned. Everyone who has carried a heavy knapsack for a distance and then laid it down knows how his first few steps without it are unbalanced.

T. GRAHAM BROWN.

Physiology Institute, University College, Cardiff, December 8.

Echinoderm Larvæ and their Bearing on Classification.

IN NATURE of December 8 there appears an article by my friend Dr. F. A. Bather entitled "Echinoderm Larvæ and their Bearing on Classification." The article consists of a review of Dr. Mortensen's work entitled "Studies of the Development and Larval Forms of Echinoderms," and in the course of the article Dr. Bather quotes with apparent approval some remarks of Dr. Mortensen to which I desire to take the strongest exception.