

therefore, been left out expressly from the mathematical chain. Hence whenever physics attempts an ultimate picture, the result is jejune, or absurd, according to the writer's taste. In any case it is incredible. "I had rather believe all the fables in the Legend, and the Talmud, and the Alcoran, than that this universal frame was without a mind."

Physics, having excluded purpose from its view, when it has no more to say, presents a scheme which is purposeless and therefore meaningless, both in its beginning and its end. It is a self-consistent scheme, but it is in no sense satisfying. The conclusion to draw from it is, apparently, that we must try again upon a broader basis, little as we know how to do so. In the meantime, all searches aimed at weeding out unjustified precision in our statements of natural 'law' fall into a class of lower importance, an exercise merely technical, interesting to those that are interested in that kind of thing.

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The Maladaptation of Trout Spermatozoa to Fresh Water.

A FEW years ago, when I was investigating sex-ratio in trout, some facts came to light which I intended to pursue further, but as there seems no opportunity at the moment of doing so, I feel it is worth putting them on record. Gray (*Jour. Physiol.*, 53, 308; 1920) had already pointed out the remarkable fact that artificial insemination of trout eggs secured a much higher percentage of fertilised eggs than did natural fertilisation, and had shown that this was due to the extremely short time ($1\frac{1}{2}$ -2 $\frac{1}{2}$ minutes) for which the sperm remain active.

Struck by this observation, I made a few experiments with sperm in different solutions. I need not go into details: the salient point which emerged was that both sodium chloride and Ringer's solutions as well as somewhat diluted sea-water enormously prolonged the sperms' period of activity. Instead of about two minutes, it might run to ten or twenty minutes; and in sea-water diluted with three parts of tap-water, to half an hour or over. Undiluted sea-water was less favourable. Details of optimum salt composition, osmotic pressure, hydrogen ion concentration, or of possible antagonistic salt action remain to be determined.

The general fact emerges, however, that the trout is an animal which, though somatically fully adapted to fresh-water life, is very imperfectly so adapted in its reproduction, its sperms being many times more efficient in a medium intermediate between its present and its ancestral environment.

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Curling.

THE letter on the flight of a curling stone by Messrs. Macaulay and Smith, in *NATURE* of Mar. 15, seems to require a little filling out. As an old curler, and one who has been much 'in the house', I may perhaps be pardoned for taking part in a subject the mathematics of which are above my head. First, on good ice covered with ever so little frozen mist a stone 'borrows', bends, or curls far less than one passing over dry, clean ice, or very clean ice *just* on the thaw. The amount of spin (handle) put on one stone without effecting the curl of that stone may be too great for

another stone, and cause it to keep its original direction. I have seen old stones, with the polish off them, take a lot of curl, even when played on the side with next to no cup. My own view is: a stone tends to turn on its outer edge and so to roll inwards; the spin of the stone when great reduces this outward turn; the tendency of the stone to follow the line of least resistance is slight, perhaps the 1 ft. 11 in. arrived at by Messrs. Macaulay and Smith.

Before leaving this interesting subject there is one more point worth consideration: Should a stone be delivered with the weight of the body behind it, as from the hack, or is it more economical in energy to swing it, as from the crampit? The finest exponent of the game I have seen of late years does both, but his swing, if not followed by a forward slide of his body, every once in a while, causes him to 'drop' his stone. If the flight is worth considering in one pair of dimensions, could some one give its correct line in the other?

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Horse and Fowl Hæmoglobin.

DURING the course of a spectrographic examination of horse and fowl hæmoglobin, we have noted that the absorption band having its peak at 4100 Å. for oxy-hæmoglobin and 4300 Å. for hæmoglobin in solutions of the above compounds, does not appear when washed corpuscle suspensions containing hæmoglobin and oxy-hæmoglobin in similar concentrations are examined. Furthermore, the absorption which begins at 2500 Å. in solutions of horse hæmoglobin also is absent when hæmoglobin or oxyhæmoglobin is observed in washed cell suspensions. The specific bands in the visible regions of solutions of the above pigments are observed in the washed cell suspensions in their usual location.

Apparently there is, in the case of hæmoglobin in the cell, a possibility that it is in combination with some constituent of the corpuscle. This problem is one of several concerning the blood pigment for which we are attempting to find a solution.

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An Anthropological Congress.

THROUGH the courtesy of a friend, I have had the opportunity of seeing a copy of a circular of invitation, dated Paris, Feb. 15, 1930, to an anthropological congress described as *XV^e Congrès Internationale d'Anthropologie et d'Archéologie Préhistorique: IV^e Session de l'Institut International d'Anthropologie: Portugal, 1930*. This invitation is signed by the president and secretaries of the Institut International d'Anthropologie, and is issued from its address in Paris. Among the 'comité d'honneur' is one of the survivors of the 'permanent committee' of the *XIV^e Congrès International* (Geneva, 1912); another represents Switzerland on a "comité international de préparation scientifique des sessions"; but there is no other apparent link with the older series of congresses.

In view of the leading article on these congresses in *NATURE* of March 1, readers may be interested to have this further information.

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Royal Anthropological Institute,
London, Mar. 15.