

the case of the Chinese, for they still use the name "hand-pattern" for the finger-print (see above). That this "hand-stamp" was in use in an ancient kingdom of Southern India, there is a proof in the Chinese records (9).

When we recognize that the hand-marks were early in use for identification by the three distinct nations, the Japanese, Chinese, and Indians, and when we consider that even the teeth-marks were so commonly used for authentication in India that the heir-apparent to Asôka Râjâ did not hesitate in plucking out his own eyes on recognizing the king's teeth-mark that accompanied the false epistle (10), it would seem quite true that among those ancient nations who were, with few exceptions, ignorant of the use of "written signature" method, it was but a natural process that the methods were invented to apply to identification some more or less unchanging members of human body.

Further, that the Chinese have paid minute attention to the finger furrows, is well attested by the classified illustrations given of them in the household "Tâ-tsâh-tsu"—the "Great Miscellany" of magic and divination—with the end of foretelling the predestined and hence *unchanging* fortunes (11); and as the art of chiromancy is alluded to in a political essay written in the third century B.C. (12), we have reason to suppose that the Chinese in such early times had already *conceived*—if not perceived—the "for ever unchanging" furrows on the finger-tips.

Bibliography.—(1) "Keirin Manroku," 1800, new edition, 1891, p. 17. (2) Y. Hagino, "Nihon Rekishi Hyôrin," 1893, vol. vi, pp. 2, 24. (3) Same as (1). (4) Takizawa, "Gendô Hôgen," 1818, vol. ii, chap. xli. (5) Cf. Davis, "China," vol. ii, p. 162; Bazin, "Théâtre Chinois," Introduction, p. li. (6) Shi-nai-ngân (?), "Shwui-hü-chuen," Kin's edition, Canton, 1883, tom. xii, p. 4. (7) *Ibid.*, tom. xxx, p. 18. (8) Cf. Terashima, "Wakan Sansai-dzue," 1713, tom. xv, art. "Tegata." (9) Twan Ching-Shih, "Yü-yáng Tsâh-tsu," ninth century A.D. tom. xiv. (10) Hsuen-tsang, "Sî-yü-ki," sub. "Takchas'ila"; Hirata, "Indo-zôshi, MSS. vol. xxi, pp. 10-11, 26. (11) Terashima, *op. cit.* tom. vii, art. "Ninsômi." (12) "Kan-fei-tze," tom. xvii, sub. "Kwei-shi."

KUMAGUSU MINAKATA.

15 Blithfield Street, Kensington, W., December 18.

Peculiarities of Psychical Research.

MAY I enter an emphatic protest against the notion insinuated both by Mr. Wells and Prof. Karl Pearson, that "Psychical Researchers" are a sort of sect engaged in spiritualistic or other propaganda? Most people, I am afraid, fight shy of psychical research, either because they are afraid that *if* there is anything in it it is the devil, or because they have a scientific reputation which they are afraid of losing. I do not know to which category Mr. Wells belongs, but apparently he fails to understand that in order to make out a case against psychical research he has got to show, not that the existence of telepathy and clairvoyance has not been proved, but that there is not even a *prima facie* case worth investigating. When we remember that ten years ago "mesmerism" was included along with telepathy and clairvoyance, we shall not attach much importance to such efforts to stifle inquiry. Even if the result should be to confirm Mr. Wells's anticipation, and show that all the coincidences that have been reported can be explained away as mistakes or mis-statements, the inquiry will yet have been worth the labour bestowed on it, if only as affording a measure of the value of testimony to the miraculous. And if this comes to pass, the bigots of science will be ready enough to claim a share in the work, if only by saying, "I told you so!"

I do not know what Prof. Karl Pearson means by his quite gratuitous attack on "the scientific acumen of the psychical researchers." Surely he cannot imagine that they overlooked the point which he has unearthed? The instructions to the experimenters were, that "the agent should draw a card at random, and cut the pack between each draw" ("Phantasms of the Living," vol. i, p. 33, foot-note). Could an abnormal distribution of the cards affect the result if those precautions were taken, or has the Professor any reason to suppose the instructions were not carried out? EDWARD T. DIXON.

Cambridge, December 14.

THE following are a few of my grounds for questioning the scientific acumen of the psychical researchers:—(1) M. Richet's experiments are cited as if they were significant of telepathic action. On the contrary, they give odds of so little weight that they are significant of nothing but want of acumen. I have in card drawing, tossing and lottery experiments, all conducted with every precaution to secure a random distribution, obtained results against which the odds were more considerable. (2) Mr. Dixon is unable to see the importance of ascertaining whether there was an abnormal distribution in the cards cut or the cards guessed. His inability is a strong confirmation of my standpoint. (3) I have heard lectures, and read papers written by psychical researchers. Both alike seem to me akin to those products of circle squarers and paradoxers, with which, as a reviewer, I am painfully familiar. As a concrete example, I take my friend Dr. Oliver Lodge's psychical papers. They are typical, to my mind, of the manner in which the scientific acumen of even a professed and most highly competent man of science vanishes when he enters this field of "research."

I do not intend to take part in a controversy on the subject at the present time, but I do suggest that no better exercise could be found for a strictly logical mind with plenty of leisure than a criticism of the products of the chief psychical researchers. Such a criticism would be of much social value, in the light of recent attempts to popularise the "results" reached by these investigators.

KARL PEARSON.

University College, London, W.C. December 19.

The Artificial Spectrum Top.

I HAVE read with interest Prof. Liveing's theory of my artificial spectrum top as summarised in NATURE of Dec. 13, p. 167, and am sorry I did not know of his conclusions before he made them public, because a very simple experiment would, I think, have convinced him of their inaccuracy. If Prof. Liveing, or any of your readers, will examine my top rotated in the light of a *bright* sodium flame, they will find that the colours are quite distinct. I know of no other way of seeing blue and red by the light of sodium, and the phenomenon, I think, shows decisively that the colours of the top are "artificial" sensations in the sense explained in my theory of the instrument.

December 16.

CHARLES E. BENHAM.

I HAVE examined Mr. Benham's top by the light of a bright sodium flame, but have failed to see anything like the colours which I see by daylight or by the light of an incandescent electric lamp. By the sodium light the outmost three circles appear, when the rotation is one way, to be dark brown, the inmost three dark leaden grey, while the intermediate circles are paler brown. Reversing the direction of rotation interchanges the appearances of the outmost and inmost three circles. I cannot see any red or blue, or green, in any case. Other people here seem to see much the same as I do when the top is illuminated by the sodium flame only. With certain black and white figures of my own, I can get a pink appearance in the sodium light, but no green or blue. With spiral figures, which are worrying to look at, I find that some people can see a play of colour even with the sodium light, but I do not see it myself. Using a turn-table, by which the rate of rotation can be regulated at will, I have found that the speed, in white light, required to bring out the colours is decidedly different for different people. This fact convinced me that the explanation of these very curious appearances must be looked for in some physiological cause. It is perhaps worth remark that a sodium flame, when there is much sodium in it to make it bright, is by no means monochromatic, though sufficiently so to make the experiment with the top a very interesting one; and as Mr. Benham sees colours by this light which some others fail to see, it goes far to prove the phenomenon to be subjective.

Cambridge, December 19.

G. D. LIVEING.

"Solute."

CORRESPONDING to the words "solvent" and "solution," some word is very badly wanted to express "the dissolved substance." The analogous word is evidently "solute," and it is as short and euphonious as the others. May I inquire why it is not in general use? Surely some one must have proposed it?

Leipzig.

F. G. DONNAN.