

whose genuine photograph I happened to possess. I therefore publicly challenged Sir Arthur Conan Doyle to reproduce in the *Morning Post* the alleged ghost photograph alongside the genuine portrait, whereupon he appears to have suggested to the editor of the *Morning Post* that the ghost photograph could not be reproduced for technical reasons. This assertion was promptly refuted by the *Daily Sketch*, which—I having meantime obtained a copy of the ghost photograph—reproduced with great perfection both this and the authentic portrait in the issue of that paper for May 28 last. There these reproductions remain as evidence that any one can consult, and as I think all sane persons will admit, form a complete exposure of this particular spiritualistic myth.

Ex uno disce omnes.

A. A. CAMPBELL SWINTON.

40 Chester Square,
London, S.W.1,
August 9.

I WOULD like to thank Mr. Campbell Swinton for his letter criticising my article on "Science and Psychical Research" in *NATURE* for July 31 last. With what he says on the subject of spiritualism I agree almost entirely; but I had hoped that my article drew a clear distinction between spiritualism and psychical research. Unfortunately, the two are evidently confounded in Mr. Swinton's mind, though they are as distinct as, let us say, astrology is from astronomy, or alchemy from chemistry. If a physicist thought of taking up astronomy, would he read up a text-book of astrology to gain his first ideas of the subject? Or if he desired to study chemistry, would he begin with a history of alchemy? Yet this is just what such a man would be doing who thought to find in a book like Sir Arthur Conan Doyle's the elements of psychical research. Let me recommend to Mr. Swinton instead the careful perusal of Prof. Charles Richet's work "Thirty Years of Psychical Research."

That I in any way make light of the fraudulent aspect of mediumship I must emphatically deny. I think that the last sentence in the concluding paragraph but one of my article supports this denial. Mr. Swinton's remarks about mediums and psychical experiments show an entire misapprehension of the essentials of the problem. Mediums may be good or bad, just like chemical balances or microscopes. Some of them are below the average level of intelligence, others greatly above it; some may be paid for their services (and why not, when, like everybody else, they have to live?), and some never take a penny for the whole of their life's work.

These things, however, are entirely beside the point. In psychical research the medium is not one of the experimenters, as Mr. Swinton seems to think, but takes exactly the same place as the spectroscope in the study of light, or the microscope in the study of minute forms of life; that is to say, *the medium is the instrument through which the phenomena become objective to the experimenters*. Usually the medium is in deep trance and knows nothing of what is occurring. The only difference between the spectroscope and microscope on one hand and the medium on the other is that one is a man-made mechanism, the other a living being (if, as many materialists aver, both are merely mechanisms, then this difference vanishes). It is easier to control the mechanism than the living being, and that is why more stringent precautions are required in psychical research than in other sciences. If a spectroscope is found to give

untrue results, it is thrown aside and a more trustworthy instrument is substituted; if a medium is found to be fraudulent, then the genuine psychical researcher will not proceed with him, but will endeavour to find a more trustworthy one. The spiritualists may make his apologia if they wish; that is no concern of psychical research.

Of all the great scientific men who have patiently and untiringly studied these phenomena—Crookes, Lodge, Richet, Flammarion, Wallace, Barrett, and others—can Mr. Swinton name a single one who has not become convinced in the end of their genuineness? On the other side we have either (a) some few who, having met with a fraudulent medium at the start, have adopted Mr. Swinton's motto *Ex uno disce omnes*, and have concluded, *without further investigation*, that the whole business was fraudulent, and (b) the great majority of scientific men, who have never experimented in the subject at all, but some of whom, nevertheless, consider themselves quite competent to pass a hasty judgment upon it. My article was simply a plea for a more scientific and logical attitude of mind from this second class. *Ex uno disce omnes* may be good Latin but it is bad logic; the hasty generalisation from insufficient facts is still, as always, the curse of modern science. A great teacher once chose twelve disciples; one of them turned out a fraud and betrayed his master. *Ex uno disce omnes*? Were all the apostles frauds because of Judas' defection? Surely not! If we must have a Latin motto, let us have a logical one, such as *Humanum est errare*; then, remembering that this applies equally well to physics, biology, or psychical research, let us make our dispositions for the detection and elimination of fraud and get on with the work.

If Mr. Swinton is really in earnest in desiring to do this, I would advise him to get into touch with my friend Mr. Harry Price, director of the National Laboratory for Psychical Research, 16 Queensberry Place, S.W. 7, and make an appointment to see over the laboratory. If his inspection proves satisfactory, perhaps he might even care to go further and arrange to be present at a sitting with a genuine medium like Stella C., when he might succeed in discovering the real reason for the peculiar behaviour of the thermograph during the production of psychic phenomena accompanied by cold breezes.

R. J. TILLYARD.
Zurich, Switzerland,
August 17.

External Capillary Action.

WHEN a glass tube, 6.5 mm. in external diameter, 5 mm. in internal diameter and of any convenient length, one end of which has been drawn out into the form of a cone 55 mm. long with a hair-like apex 0.1 mm. in diameter and a correspondingly small aperture (Fig. 1 (1)) is filled with water containing, say, 1 per cent. of caustic soda, and held with its point downwards at an angle of 35° above the horizontal, a minute stream of water issues from its aperture, turns round underneath its lip and ascends to a distance of 33 mm. on its outer side in the form of a series of minute, disconnected, elongated globules which appear to encircle it. In flowing upwards these globules gradually lose their identity, and finally coalesce with each other to form a substantial drop at a point where the diameter of the cone is about 2 mm.

The drop encircles the cone symmetrically when the tube is vertical, but hangs from its lower side, as shown in (2) when the tube is held at an angle. After the drop has attained a weight of about 0.0113 gm.