that should illustrate the events in families, schools, houses, &c., such as the stained-glass windows in churches do those in the history of the Bible. How prettily girls might design pictographs to record notable events in a pleasant tour, and interchange them with their fellow-travellers as presents. Such designs as these could be made subjects of embroidery, or, if on a larger scale, of that brass *repoussé* work which is, or was, so much in fashion. It would be by no means difficult to convert them into actual medallions. First the wax model, then the plaster cast, then the cast in white fusible metal, then the covering with an electrotyped coating of silver, just in the way that the ancient coins are reproduced at the British Museum, at the cost of about three shillings each, which are now so frequently used in rows for necklaces. What a delightful memorial of twenty-five years of wedded history might be given by a husband to his wife, in the form of a necklace of such medals. It would be a pleasant labour to make a set of designs, which an artist could afterwards put into better forms, and construct from them the wax medallions for the electrotypist to cast and turn into metal. I commend this idea of commemorative pictographs and *glyptographs* (as works in relief ought to be called) to the notice of amateur artists, whether they work in pencil, ink, colour, carving, embroidery, *repoussé* work, china painting, or in modelling.

This volume is an excellent example of the growing variety and wealth of material now available to inquirers into the origin of language. We meet in it with abundant evidence of the rapidity with which pictographs become abbreviated into conventional symbols, and are thereby adapted to play the same important part in reasoning that is usually played by words. I cannot see that it makes any fundamental difference in the use of symbols whether they appeal to the ear or to the eye, though I fully grant that on many grounds, not worth entering into here, the former is more generally convenient, and best suits the idiosyncracies of the majority of persons. The unassisted sense of touch, as we have learnt from the case of Laura Bridgeman, may afford an adequate basis for the exercise of a considerable amount of reasoning. And for aught I can see to the contrary, a dog who "ponders," to use a dog-trainer's expression, may occasionally be carrying out some real act of thought by the aid of imagined and symbolic odours.

FRANCIS GALTON.

COCOA-NUT PEARLS.

THE following letter has been sent to us by Dr. Sydney J. Hickson :—

"During my recent travels in North Celebes I was frequently asked by the Dutch planters, and others, if I had ever seen a 'cocoa-nut stone.' These stones are said to be very rarely found (1 in 2000 or more) in the perisperm of the cocoa-nut, and when found are kept by the natives as a charm against disease and evil spirits. This story of the cocoa-nut stone was so constantly told me, and in every case without any variation in its details, that I made every effort before leaving to obtain some specimens, and eventually succeeded in obtaining two.

"One of these is nearly a perfect sphere, 14 mm. in diameter, and the other, rather smaller in size, is irregularly pear-shaped. In both specimens the surface is worn nearly smooth by friction. The spherical one I have had cut into two halves, but I can find no concentric or other markings on the polished cut surfaces.

"Dr. Kimmins has kindly submitted one half to a careful chemical analysis, and finds that it consists of pure carbonate of lime without any trace of other salts or vegetable tissue.

"I should be very glad if any of your readers could inform me if there are any of these stones in any of the Museums, or if there is any evidence beyond mere hearsay for their existence in the perisperm of the cocoa-nut."

On this letter Mr. Thiselton Dyer, to whom we sent it, has been good enough to make the following remarks :—

Dr. Hickson's account of the calcareous concretions occasionally found in the central hollow (filled with fluid—the so-called "milk") of the endosperm of the seed of the cocoa-nut is extremely interesting. It appears to me a phenomenon of the same order as tabasheer, to which I recently drew attention in this journal.

The circumstances of the occurrence of these stones or "pearls" are in many respects parallel to those which attend the formation of tabasheer. In both cases, mineral matter in palpable masses is withdrawn from solution in considerable volumes of fluid contained in tolerably large cavities in living plants—and in both instances they are Monocotyledons.

In the case of the cocoa-nut pearls the material is calcium carbonate, and this is well known to concrete in a peculiar manner from solutions in which organic matter is also present.

In my note on tabasheer I referred to the reported occurrence of mineral concretions in the wood of various tropical Dicotyledonous trees. Tabasheer is too well known to be pooh-poohed; but some of my scientific friends expressed a polite incredulity as to the other cases. I learn, however, from Prof. Judd, F.R.S., that he has obtained a specimen of apatite found in cutting up a mass of teak-wood. The occurrence of this mineral under these circumstances has long been recorded; but I have never had the good fortune to see a specimen.

Returning to cocoa-nut pearls, I send you a note which the *Tropical Agriculturist* for April last quotes from the *Straits Times*:—

"A trade journal appearing in Java gives the following particulars regarding a peculiar kind of pearl found in this part of the world:—It is well known that pearls have been met with within oysters and mussels. Sometimes even trees yield pearls. In the Proceedings of the Boston Society of Natural History, there is a paper by Mr. J. Bacon regarding the kind of pearls often found within cocoa-nuts. The specimens shown have been bought at Singapore. They are said to be so rare in the East Indies as to be highly prized by the native rajahs, and worn by them as precious stones. Mr. Bacon himself possessed a small pearl of this sort. It is said that when allowed to grow, they will reach the size of cherries. This pearl resembles the common variety in smoothness, whiteness, and scant lustre of surface. It is harder than it, and almost as hard as feldspar or opal. The common pearl varies in hardness, but is never harder than feldspar. The cocoa-nut pearl consists of carbonate of lime, with very few organic substances remaining after treatment with acid solutions. This organic matter is insoluble, shows no trace of vegetable substances after microscopical examination, and seems to be akin to albumen in structure. In the common pearl there is also found an albuminous substance, but the latter remains unchanged in appearance and lustre even after the calcareous constituent parts have been dissolved away. In other respects microscopical research has brought out the fact that the cocoa-nut pearl is formed of concentric layers without any nucleus. The whole mass is made up of layers of fine crystalline fibres. Prof. Bleekrode, in commenting on the former in a Dutch scientific periodical, says that Rumphius, the famous botanist, had in his 'Herbarium Amboinense,' given full particulars of this petrifaction in the cocoa-nut. Rumphius has even illustrated his account of it by accompanying drawings of the two forms in which this kind of pearl is met with—pear-shaped and round, either of uniform appearance or with red edges. Hardly one

in a thousand cocoa-nuts on the average displays this strange peculiarity. The formation of the latter is always a remarkable phenomenon, hard to account for, from the water in the nuts generally lacking the chemical substances favouring abnormal growth of the kind. Rumphius states for a fact that cocoa-nuts from Macassar yield more pearls than those from other places. This scientist, in 1682, sent, as a present to the Grand Duke of Tuscany, a ring in which a cocoa-nut pearl had been set. Similar pearl-like formations are met with in other East Indian fruits, such as the waringin, the pomegranate, and the kechubong."

To this may be conveniently added two brief extracts from the long and admirable account given by Rumphius:—

"*Calappites*, Belgis *Calappus-Steen*, Malaicensibus *Mestica Calappa*, albus est lapillus instar marmoris seu silicis albi, durus, planus, ac glaber, cujus putaveram alio loco inter lapides ac mineras descriptionem dedisse, quum vero in *Calappa nuce* inveniatur, ac sollicitus sim, opus illud a me forte non absolutum iri, animo induxi hic loci ejus exhibere descriptionem. Est itaque albus ac politus, seu glaber lapillus in interiore *Calappæ nucis* parte concrescens, nunc putamini fixus, nunc vero media in lympha natans, diversæ ac duplicis potissimum formæ" (Rumphius, "Herbarium Amboinense," vol. i. pp. 21, 22).

"Incolæ plurimum omnes *Mesticas* amant, quarum quasdam tanti æstimant, ut optimis etiam præferant gemmis; plurimas enim ipsis tribuunt immo sine dubio superstitiosas etiam virtutes, gestant enim has ad nudum corpus, in annulis, et armis, ad prosperum conatuum successum obtinendum. Elegantissimos ac rotundissimos hujus Calappi lapillos, seu *Calappites* imponunt annulis suis, vel etiam telis adpendent, non auro, sed argento circumdatos, dicentes melius hoc cum natura *Calappites* convenire" (p. 22).

If Dr. Hickson would present one of his pearls to the Kew Museum, it would, I am sure, interest a great many persons who would be glad to see an authentic specimen of so interesting a curiosity.

NOTES.

THE Annual Meeting of the Royal Society for the election of Fellows was held at the Society's rooms in Burlington House on Thursday last, when the following gentlemen were elected into the Society: John Young Buchanan, M.A., John Theodore Cash, M.D., Sir James Nicholas Douglass, M.I.C.E., Prof. James Alfred Ewing, B.Sc., Prof. George Forbes, M.A., William Richard Gowers, M.D., Prof. Alexander B. W. Kennedy, M.I.C.E., George King, M.B., Sir John Kirk, M.D., Prof. Oliver Joseph Lodge, D.Sc., Prof. John Milne, F.G.S., Rev. Octavius Pickard-Cambridge, M.A., George James Snelus, F.C.S., Thomas, Lord Walsingham, William Whitaker, B.A.

THE Council of the London Mathematical Society have awarded the second De Morgan medal to Prof. Sylvester, F.R.S., for his numerous and brilliant contributions to pure mathematics. The medal will be presented at the Council meeting in November next.

THE preparations for the forthcoming meeting of the British Association in Manchester are progressing very favourably. A strong Local Committee has been formed, and a guarantee fund of over £10,000 has been raised to meet the necessary local expenses. The reception-room will be in the recently-built Natural History Museum of the Owens College, and the Section rooms in the College or its immediate neighbourhood. A prominent feature of the meeting will be the presence of a large number of eminent foreign men of science, of whom more than a hundred have already accepted invitations to attend.

ARRANGEMENTS for the dinner to Prof. Tyndall are progressing satisfactorily under the direction of the Executive Committee consisting of Prof. Stokes (Chairman), Sir F. Abel, Sir W. Bowman, Sir F. Bramwell, Dr. Evans, Prof. Frankland, Dr. Hirst, Prof. Huxley, and Sir Henry Roscoe. Circulars announcing the dinner have been largely issued. It is, however, for obvious reasons impossible to send notices to all those who might wish to attend, and applications for tickets are daily made by gentlemen who have received no special notification of the event. There is no doubt that a body of scientific men will meet at the dinner such as has seldom or never been brought together on a similar occasion. Nor will the gathering be confined to scientific men alone. Among others, the following have also expressed their intention of being present: Lord Derby, Lord Lytton, Earl Bathurst, Sir F. Pollock, Sir F. Leighton, Lieut.-General Smyth, Prof. Bonamy Price, and Messrs. Leslie Stephen, W. Lecky, and Wemyss Reid.

THE Ladies' *Soirée* at the Royal Society, as we stated last week, was largely attended. Careful preparations had been made for it, and it was a great success. At intervals, in the Principal Library, a cornet solo was telephoned from Brighton. A large number of objects of great scientific interest were exhibited. Photographs of clouds, and photographs of the Firth of Forth Bridge, were shown with the lime-light; the former with demonstrations by the Hon. Ralph Abercromby, the latter with demonstrations by Mr. Baker. The microscopic structure of pearls was also shown with the lime-light, by Dr. George Harley. The Zoological Society of London exhibited a fine living specimen of the electric eel, from which shocks were taken. Prof. A. W. Rücker exhibited—(1) Colours of soap-films rotating under the influence of an air-current. A jet of air is directed on to the film so as to form a vortex, the colours of which change as the film becomes thinner. This experiment is due to Sir David Brewster. Attention has been recently called to it by Lord Rayleigh. (2) Artificial imitation of the colours of the setting sun. Light is passed through a glass cell containing a solution of sodium hyposulphite. If a little hydrochloric acid is added, the sulphur is deposited in fine particles which scatter the blue end of the spectrum. The transmitted light becomes redder, and colours like those of sunset are produced. This experiment is due to Capt. Abney. (3) Apparatus to illustrate the passage of light through lenses. An application on a large scale of the method of tracing the rays by passing them through air in a closed space charged with a small quantity of smoke. Chrysalides and living larvæ showing the influence of surroundings upon their colours were exhibited by Mr. E. B. Poulton; and Dr. E. Klein exhibited the following specimens of microbes under the microscope and in cultivation:—*Bacillus anthracis; Bacillus tuberculosis;* Bacillus of leprosy; Bacillus of swine fever; Bacillus of septicæmia; Bacillus found in typhoid fever; Spirillum found in Asiatic cholera; several other species of Spirilla; several species of *Bacterium termo;* Micrococcus of foot-and-mouth disease; Micrococcus of scarlet fever; Micrococcus of vaccine; different species of coloured microbes. Mr. Chichester A. Bell showed apparatus for reproducing audibly the vibrations of liquid jets. Vibratory motions of the orifice from which a liquid jet escapes, give rise to slight swellings, and constrictions of the liquid column. The swellings increase and the constrictions diminish as the jet travels downwards, finally causing it to break into drops. When the jet strikes upon a flat surface, the swellings are continued as waves in the thin sheet of liquid, which spreads out from the point of impact. The jet liquid being a conductor of electricity (acidulated water), and two platinum electrodes in circuit with a battery, and a telephone being immersed in the liquid sheet or nappe, the jet vibrations are reproduced as sound in the telephone.