

Several species of American marsupials are figured by seventeenth-century writers, such as J. E. Nieremberg (1635), George Marcgrav (1648), César de Rochefort (1658), and others. An illustration given by the last-named author is here reproduced (Fig. 1).

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Differential Antiseptic Action of Organic Dyes.

AN important property of certain organic dyes is their differential antiseptic action. Thus, varieties of *B. coli* commonly met with in the intestine are more susceptible to the inhibitory action of the tetraethyl-diamidodiphenylmethane derivative, "brilliant green," than are typhoid or paratyphoid bacilli. The use of a fluid culture medium containing this dye (along with telluric acid) facilitates greatly the isolation of scanty typhoid and paratyphoid bacilli from fæces, since the growth of the various members of the *coli* group can be restrained, while the organisms in question proliferate actively. The detection of cases of typhoid infection, e.g. in "carriers," which is frequently a difficult bacteriological problem, can be materially simplified by this procedure. But our supplies of brilliant green have hitherto been derived from Germany, and I shall be indebted to your readers for information as to whether this dye is prepared in a fairly pure state by anyone in this country.

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The Physical Properties of Isotopes.

DR. LINDEMANN (NATURE, March 4) deduces that the vapour pressure of lead from radio-active origin, or of radium D, should be very considerably different from ordinary lead at comparatively low temperatures. It would be no easy matter to test this at such a low temperature as 100° C. However, it is being found possible to make measurements of the vapour pressure of cadmium down to 10⁻⁶ mm., and the method should be applicable to the point in question.

It is interesting to note in connection with the last paragraph of Dr. Lindemann's letter that the arc spectra of lead of radio-active origin and of ordinary lead show no difference, as Mr. T. R. Merton has recently found, further confirming the view that the external electrons are responsible both for the spectra and the individual chemical properties of elements.

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A Misprint in Halphen's "Fonctions Elliptiques."

HAVING recently had to use Halphen's multiplication formulæ for the special cases of the lemniscate functions ($g_3=0$), I have convinced myself that there is a rather serious misprint in his expression for ψ_4 (vol. i., p. 96), namely, instead of $+\frac{1}{32}g_2^2$ in the last term, we should read $-\frac{1}{32}g_2^2$. Thus with $g_2=4$, and this correction, we have

$$\begin{aligned}\psi_4 &= \wp'(-2\wp^4 + 10\wp^2 - 2) \\ &= -2\wp'(\wp^2 + 1)(\wp^4 - 6\wp^2 + 1)\end{aligned}$$

where the factor $(\wp^2 + 1)$ can be foreseen from the theory. With the other sign we have no such resolution.

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Early References to Musical Sands.

AN allusion to musical sands may be found in one of the tales from the "Arabian Nights"—"The Story of the Two Sisters who were jealous of their Younger

Sister." Prince Bahman, who was journeying in search of rarities and treasures, reaches the foot of a mountain, and while ascending "was assailed with the most hideous sounds," while others who followed him heard "groans, shouts, and all sorts of insulting epithets." One of the wonders they were in search of was the "Singing Tree," which "commenced to issue a series of exquisite strains of music" as soon as the Princess Parizadé saw it.

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March 21.

TWO CHINESE TOURS.¹

A SOMEWHAT unexpected sequel to the mission which Sir Francis Younghusband led to Lhasa in 1903-4 was the appreciation by Chinese officials of the fact that the trade in Indian opium, which has at times been held up as a reproach to England, was in reality due to the demand of China for the drug. It is interesting to reflect that the truth should first have dawned upon a Chinese envoy who had been educated in the United States. The novel idea took root and engendered a movement which spread in China with such rapidity that in 1906 an imperial edict dealing with the opium question was promulgated. This rescript embodied elaborate provisions for the immediate curtailment and the gradual extinction of the use of the drug. Necessarily, therefore, it took account not only of the enormous Chinese out-turn of opium, but of the smaller, though still important amount imported from India. Proposals and counter-proposals were accordingly formulated in 1907 by the Governments of China and Britain, and certain regulations, to remain effective for three years, were agreed upon by the high contracting parties and became operative in 1908.

Meanwhile the Government of the United States thought fit to initiate a movement of an international character which culminated in the assembly at Shanghai in 1908 of an opium commission, the findings of which reflect a desire to aid the Chinese authorities in their crusade against the opium habit; while, before the preliminary period of three years had expired, negotiations for a new agreement between China and the United Kingdom were set on foot. As a preliminary to the ratification of this agreement it was desirable that his Majesty's Government should know what had been the actual effect in China of the restrictive measures adopted there in response to the imperial injunctions of 1906. The officer to whom the important duty of reporting upon this feature of the case was Sir Alexander Hosie. No one better fitted for the duty of traversing the six provinces of China, known to have been the chief opium-producing areas in that empire, could have been selected. Sir Alexander had already travelled extensively, and in some cases, as an officer of the Chinese Consular Service, had resided in the provinces

¹ "On the Trail of the Opium Poppy. A Narrative of Travel in the Chief Opium-producing Provinces of China." By Sir Alexander Hosie. 2 vols. Vol. i., pp. viii+300. Vol. ii., pp. 308. (London: G. Philip and Son, Ltd., 1914.) Price 25s. net 2 volumes.

involved. During a sojourn of more than thirty years in China he had taken a keen interest in all the economic resources of the empire; he had, moreover, been one of the members of the International Opium Commission which met at Shanghai. The narrative and the results of the two official journeys, undertaken with the object of securing the information of which the British Government had need, are given in the volumes now before us.

As the author in his preface explains, the book is not devoted to the history of the opium question. Nevertheless, those interested in that question will do well to consult this work. The circumstance that such consultants may neither be inclined nor qualified to appreciate the whole of the contents has been forestalled by the provision, for their especial benefit, of a couple of appendices wherein the genesis of the anti-opium crusade is outlined, and the results of his own investigations of 1910-11 into the cultivation of the poppy are summarised.

made. But even when due allowance is made for this possibility, one of the most interesting impressions which the narrative of the author conveys is the extent to which species that are devoid of utilitarian interest and value have become eliminated. The naturally regenerated constituents of the woodlands on uncultivated mountain slopes appear in the main to be as strictly economic as the species planted along highways and irrigation channels.

The detailed descriptions of the various stages should render the work useful to those who may follow the author's route, but the general reader will be most interested in, and will profit most from, the incidental accounts of the configuration, the industries, and the polity of the provinces traversed by him. A passage which excites interest and arrests attention deals with the famous Nestorian tablet at Hsi-an Fu in Shensi, while the temperate but convincing reference to the shortcomings of European cartography, the uniformity and simplicity of Chinese delimita-

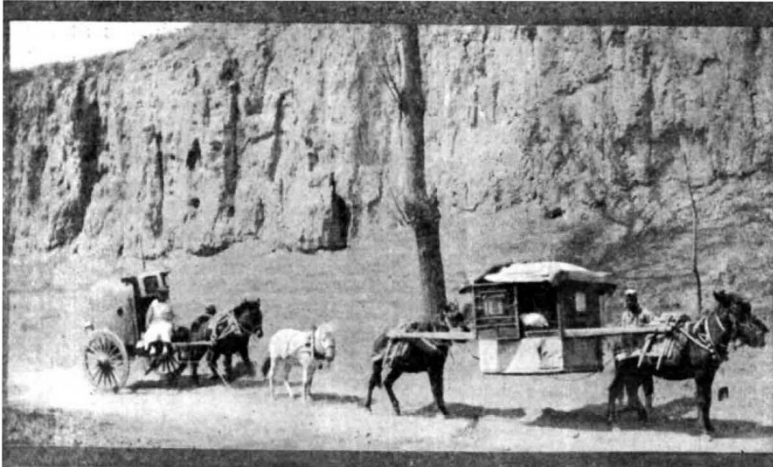


FIG. 1.—The loess formation, with mule litter and passenger cart, Shansi. From "On the Trail of the Opium Poppy."



FIG. 2.—Chinese ash (*Fraxinus chinensis*) coated with insect white wax. From "On the Trail of the Opium Poppy."

As compared with various other accounts of recent Chinese travel, an outstanding feature of the present work is the extent to which it deals with the conditions and the appearance of long-settled and closely cultivated portions of that empire. Having regard to the primary purpose of his two journeys this was inevitable, nor can the reader be too grateful to the author for the care and precision with which he recapitulates the various crops observed in the course of a particular stage. Even in districts where tillage is most intensive, however, areas occur which are unfit for cultivation, and are under timber. The components of the vegetation in cases of this kind are as carefully assessed as the field crops. In one such passage the author warns the reader not to assume, because reference has been made almost exclusively to trees of economic importance, that species of less consequence were altogether absent. The same may be true of other stages, as to which no such reservation is

tions and terminology notwithstanding, evokes the reader's sympathy. Space forbids more than a passing reference to a few of the interesting topics discussed in the work. Among these may be mentioned the cultivation of huskless grain, the use of the fibres quaintly known to European commerce as China jute and China grass, the preparation of varnish, the weaving of silk, the making of bamboo hats, the wood-oil industry, the smelting of copper, the mining of coal, the separation of salt, the planting of rice, the various contrivances for irrigation, the different types of bridges. With these and other equally interesting topics the reader may best be left to make himself acquainted by reading the book. One of the most interesting passages in the work deals with the familiar yet little understood loess formation (Fig. 1), so extensively represented in the area traversed during the author's northern journey. Another, taken from the southern journey, treats of the white-wax industry (Fig. 2),

for our knowledge of which we are mainly indebted to the author's powers of observation. These powers are so rarely at fault that it seems almost ungracious to indicate the only instance in which he appears to have been led into misapprehension; there is one passage in which what, from his succinct description, was obviously a silk-cotton tree has been confused with that—from a phytogeographical point of view—extremely interesting species, the tulip-tree of China. The book is admirably printed, and in its 600 or so pages we have noticed but one typographical error.

THE TELEPHONE IN SURGERY.

IN the *Lancet* of January 30 is published an address by Sir James Mackenzie Davidson, delivered before the Medical Society of London, on the telephone attachment in surgery. By this phrase the author refers to the attachment of a telephone receiver to a probe, or lancet, or other metallic instrument used by a surgeon when exploring a wound containing a bullet or other piece of extraneous metallic matter, in such a way that the sound heard in the telephone when the probe comes into contact with the bullet enables the surgeon to make certain of the position of the bullet in the wound.

As this matter appears to be of real importance at the moment to surgeons in the field hospitals of our armies abroad, we make no apologies for giving our readers a summary of the more salient features of Sir Mackenzie Davidson's address. His attention was first directed to the use of the telephone as an auxiliary in surgery thirty-two years ago, by the accounts of the attempts made by Graham Bell, to determine, by means of the induction balance, the position of the bullet in the body of President Garfield when he was assassinated in 1881. Speaking afterwards of these attempts, and of the difficulties attending the method—which had failed in that notable case to yield satisfactory indications—Graham Bell outlined another and simpler electrical method for the detection of bullets, as follows:—

It consists of a telephone, to one terminal of which a fine needle is fixed, and to the other a plate of metal of the same nature as the needle. The plate is placed on the limb to be examined, and the needle is thrust in where the bullet is believed to be; and when it strikes the ball a galvanic battery is formed within the body. . . . *This will cause a click to be heard in the telephone each time the bullet is struck.* This is a far simpler apparatus than the induction balance, and one far more easily procured.

This method Sir Mackenzie Davidson tried in 1887 at the Aberdeen Royal Infirmary, in the case of a patient suffering from a revolver shot, using a silver probe joined by a wire to one terminal, and a silver plate, about 6 inches long and 4 inches wide, connected by wire to the other terminal of a telephone receiver. In subsequent years he employed the same method to verify the results of early X-ray localisations, and it enabled surgeons in the South African War to differentiate, as the

common probe could not do, between a distorted and broken up Mauser bullet and a fragment of bone. Sir Mackenzie Davidson states that until quite recently he took it for granted that the same metal must be used—as Graham Bell stated—for the probing instrument and for the plate placed upon the patient's skin. But since the outbreak of the present war the difficulty experienced by skilful surgeons in finding bullets in wounds, even after the most precise localisation by means of X-rays, has caused him to experiment further, and to extend the method. Briefly, he finds, as the result of experimenting on different pairs of metals, that there is nothing so satisfactory as a plate of carbon, such as is used in an ordinary bichromate cell, to place upon the moistened skin of the patient as the auxiliary pole. The surgeon's metallic instruments are usually of steel, often silver-plated or nickel-plated. The metals to be sought for are lead, iron (and iron alloys), copper, and nickel. Carbon presents a sufficiently wide difference in its galvanic properties from any of these to render it suitable. The result is enhanced if the solution used to moisten the skin beneath the plate is the solution of iodine employed as a disinfecting agent, since iodine is also an excellent depolariser. A low-resistance telephone is better adapted than the more expensive high-resistance receivers used in wireless telegraphy, giving louder sounds besides being cheaper.

The form of telephone recommended is one with double receivers fixed to a flexible steel hoop that is placed on the head, so that each ear listens to its own receiver, and is protected from extraneous sounds. The operating surgeon places the auxiliary carbon plate upon the patient's moistened skin at some convenient spot near the place where the foreign object is supposed to be situated, and it may be held tightly against the skin by bandage or plaster. If a bare wire of silver is used as probe, it should, of course, be properly disinfected. Or the wire may be wound round an ordinary probe or needle or forceps which is used, or a spring clip may be employed to connect the instrument to the wire connected to the telephone. No battery of any kind is needed, owing to the galvanic action between the carbon-plate and the metal of the bullet. If, under these conditions, the instrument is introduced into the body of the patient, it will on the first contact with the bullet or other metallic body cause a most unmistakable click; while if the probe or scalpel is gently moved along the foreign body so as to make rubbing contact along it, an equally unmistakable rattling sound will be heard. Several examples of successful application, showing the advantages gained by the use of this method, are given by Sir Mackenzie, who states it to be his belief "that the time will come when no surgeon will attempt to remove a deeply embedded metallic body without having this telephone attachment at his command." He makes out an exceedingly good case for this application of the telephone to surgery.