cating, as Daubree has always remarked, that the iron rested on a granitic soil.

The topographical sketch of the locality made by Dr. Campos shows no indication of concealed dykes of basic rocks, which, according to universal experience of occurrences under similar conditions in Brazil, should, from their more ready decomposition, form depressions on the surface. The principal mass was found at the foot of the hill near a creek on the point of a spur, and aligned with a mass about 200 meters distant at the extreme summit of the hill and with an intermediate find close to an exposure of granite on the same spur. The other finds are aligned parallel to the course of the creek. In one pit on this line iron was found to a depth of 2.8 meters, covered with wash earth brought down by the rain from the higher portions of the hill.

Dr. Calogeras, who argues in favor of a terrestrial origin, presents no facts in disaccord with the above observation that the only rock known in the immediate vicinity of the iron is granitic. His argument, based on the occurrence in the region (principally at a distance of several miles) of iron and manganese ores (oxides), and presumed to be connected with dykes of diabase, and of a small percentage of nickel (0.30 per cent) in one of his specimens of an argillaceous manganese ore, has no direct bearing on the question of origin. Even if the native iron had been found resting upon the said ore deposits instead of several miles away, a genetic relation would still have to be proven, and until direct evidence was presented most petrologists would probably regard the relation as casual rather than genetic.

No specimens of the diabase of the vicinity of Sâo Francisco have come to hand. Assuming that it is of the usual character of the diabases of similar regions in Brazil, it is not so unlike the basalt, or dolerite, of Ovifak that a comparison might not with propriety be made. It neither approaches nor differs from the iron-bearing Greenland rock more than do the normal diabases of other parts of the world, in which as yet nothing analogous with the Ovifak occurrence has been noted. If the diabase or some related highly basic rock had been found in immediate contact with the iron, a comparison with the Ovifak occurrence would be justified, but even then complete proof of a terrestrial origin would be lacking. As the case stands at present, with tolerably satisfactory evidence that the iron rested on highly acid rocks or their debris, the hypothesis of such an origin involves that of the formation of native iron under conditions entirely different from those of Ovifak.

Another argument in favor of the meteoric origin of the iron may be drawn from the state of preservation of the masses. Although the metal itself is more than usually resistant to oxidizing agencies and to the action of acids, the abundant presence of pyrite renders it peculiarly susceptible to alteration. All the smaller masses are completely changed to limonite, pieces of the size of a man's head or larger are in large part altered, but still show remnants of metal badly fragmented and oxidized in the centre, and only the larger masses retain perfectly sound metal and sulphide. Even in the dryer air of museums it is not a good-keeping iron, the disintegrating action of the decomposing sulphide being singularly favored by the fragmented condition of the metal. Under these circumstances it is extremely improbable that, buried in the soil and exposed to the extremely rainy climate of the coast region of southern Brazil, the iron could have been preserved for more than a few centuries at the utmost. The hypothesis of a terrestrial origin involves the exposure to destructive agencies through untold geological ages, since the present topographical features of this part of the Brazilian coast are unquestionably extremely old. In view of the Ovifak occurrence, it is possible and even probable that native iron of terrestrial origin simulating meteorites will be found in other parts of the world and perhaps in rocks of different petrographical types. It is not probable, however, that the first discoveries of this character will be made in surface exposures in the extremely humid coast region of southern Brazil, where the country rock is of Archean age, and the eruptives presumably date back to the beginning of the Secondary age, if not earlier.

NEW TREATMENT FOR SNAKE-BITE AND OTHER POISONS.

BY W. H. WOOSTER, PRESIDENT OF THE BALLARAT ASTRO-PHYSICAL SOCIETY, VICTORIA, AUSTRALIA.

As poisonous snakes are more or less common in many countries, and the circulation of *Science* is world-wide, and other cases of poisoning often occur, and as I have been the means of saving a life by a new process, one that can be applied when it is too late for the orthodox method of cutting and sucking, and used by anybody, with materials at one's hand in every house, I have concluded that I should not be doing my duty if I did not make it known. Some time since, when living in the country, one of the nicest little girls of my acquaintance, about four years of age, was brought to me by an elder sister for diagnosis and treatment. She was swelling from head to foot, becoming cold and stiff in the limbs, and losing her power to answer or even understand questions. As I had been the means of effecting several simple cures in the district, she was sent in the hope that I would be able to tell instinctively what was amiss, and to cure it as if by magic. As the sequel proved, the latter was almost realized, notwithstanding that in regard to the former I was quite at sea. She had never known what a snake was, but for strategic purposes, well-known to managers of children, had often been terrified with the name of "bulldog" without knowing what that was (bulldog was the popular name for a very poisonous, pugnacious, and gigantic ant, *Myrmecia vindex*); so that whenever she got stung or bitten by anything, it was put to the credit of the bulldogs, as on this occasion. She had screamed and fallen a few yards from the house, and told her mother a bulldog had bitten her on the foot; and that was all she knew. The foot was examined, but from running barefoot was so full of scratches and punctures that none could be fixed on as certainly the marks of snake-fangs. The mischief had occurred about an hour before I saw her, and while being examined she was getting rapidly worse; the swelling, coldness, and stiffness were becoming alarming, the lips as thick as one's thumb, the hollows on each side of the nose were filled up level, and of a steel-blue and sea-green color, the arms, lower limbs, and body were becoming blotched with irregular raised parts, white and hard, the spaces between being sunk and dark-purple; the pulse, too, was getting exceedingly feeble. Not thinking a bulldog ant could produce such effects, and not being certain that it was a snake-bite, I concluded that it might be a spider-bite, as my only brother had nearly lost his life from that cause. Even if the place of the bite or sting could have been found, it was clearly too late to cut and suck, for the poison was already all over the body, and rapidly mastering the vital functions; besides which, no one in the district had an ammonia syringe for hypodermic injection. The question was, What could be done? Precedent said: Send for a doctor. But there was none nearer than eight miles, and then he might not be at home; or, if at home, most likely intoxicated; and, besides that, she looked as though she would die before a doctor could see her.

In this conflict of thought and feeling, a happy idea struck me. I had proved in my own person the power of a hydropathic, hot-sweating-pack to produce a flood of perspiration, and throw off impurities from the blood, and it now occurred to me that if I could sweat the poison out from the whole surface, it would not matter where it got in, nor what put it there; and, moreover, that if it were any good, the danger would be over before anyone could get half-way to the doctor's; and, if twenty minutes or so produced no benefit, the doctor could still be sent for as a last resource. It was a great responsibility, but under the circumstances I felt it a duty, and went to work. Of course, there was no hot water ready, but we soon made some, and put it into a tub, into which the child was placed, with a blanket over all, tucked in close round the neck to keep the steam in, but leaving the head out. This was to open the pores of the skin quickly. While in this I spread a piece of oilcloth on the table, and a pair of blankets on that. As soon as more hot water was ready, a sheet was wrung tightly out of it, and spread on the blankets. The child was laid on this, and then first one side, and then the other lapped over her, and it was tucked in close about the neck; then the

blankets followed, and lastly the oilcloth, and she was put to bed, with another pile of blankets on top. Then some spirits were got to keep the heart-action up, which by this time had almost ceased. Before this the mother felt sure the child was dying, and was nearly frantic with the idea. Hot brandy and water was given in a teaspoon every few minutes, and the case was watched with no little anxiety. She had not been in the pack over fifteen minutes before improvement became apparent. The dark rings round the eyes were less marked, the eyes themselves brighter and less sunk, and the blue and green tints less ghastly. Our hopes began to revive, and our fears to lose their terror. In five minutes more the improvement became so decided that with great gratitude I felt that the novel plan was a grand success, and the danger over. She now became conscious, and, evidently feeling the benefit of the spirit stimulus, asked occasionally for her "toddy," which she, knowing as much about it as she did of snakes and bulldogs, called "vinegar and milk." As the need and benefit of it grew less, she liked it less, and finally refused it. After something over an hour, we took her out of the pack, and were delighted to see that all the swelling, blotches, stiffness, and discoloration had completely disappeared, and Amy was herself again. She was now washed down in cool water, to close the pores and prevent catching cold, and put to bed as usual. She was left with strict injunctions that I should be called up if anything went wrong during the night, but my sleep was not disturbed. Next morning I went to see my little patient, and found her at the breakfast table, with as good an appetite as ever. After that we can excuse the mother for thinking that the hot sweating-pack was the panacea for "all the ills that flesh is heir to."

But some will ask, Why call this a case of snake-bite? When she recovered, we questioned her as to the size and appearance of the "bulldog," and she described it as "a big, long, pretty thing." When asked how many legs it had, she said, "No legs; a big pretty thing, as long as my arm, all shiny." But evidence still more definite was at hand. A few days after, the father, who was up-country at the time of the occurrence, sank a well near where she had fallen, and where there was a lot of long grass and loose timber, and, having struck water, stopped for a rest and a cup of tea. When he returned, a black snake (*Pseudechys porphyraicus*), having smelt the water, was down in the well. He came to tell me that he thought he had caught Amy's bulldog. Then we took her to the well without telling her anything of what was in it, and asked her if she had ever seen a thing like that; and directly she saw it she said, "Yes, that's the bulldog that bit me."

Of course the ligature-cut-and-suck method is best when applied in time, and when the bitten spot is known; but it would be utterly useless in such a case as this, where the poison had already been carried all over the body. The method here advocated would be applicable, I believe, to almost all cases of poisoning that had reached the same stage, whether from snakes, spiders, scorpions, insects, and such like, or from poisons taken by the mouth, whether drunk as liquids or eaten as poisonous fish, etc.; and I have no doubt would save many a valuable life after the venom had got too far through the system for local sucking, or even the stomach-pump, to be of any avail.

ON THE INTRODUCTION OF THE EUROPEAN BARK-BEETLE-DESTROYER (CLERUS FORMICARIUS L.) TO AMERICA.

BY CAMILLO F. SCHAUFUSS, DIRECTOR, MUSEUM LUDWIG SALVATOR, MEISSEN, GERMANY.

DIE forstlichen Verhältnisse Europas und Amerikas sind durchaus verschieden:

In dem alten Europa — wir haben hier also die älteren Culturstaaten, namentlich Mitteleuropa, im Auge — finden wir eine Jahrhunderte alte, rationelle Forstbewirthschaftung durch akademisch gebildete, fachkundige Männer, infolgedessen, was uns als erste Vorbedingung für einen *geordneten* Waldbau erscheint, ein vorzügliches Strassenwesen innerhalb der Forsten. Damit ist ein leichter und billiger Transport der geschlagenen Bäume vorhanden.

In dem jungen Amerika haben wir noch grosse Strecken ganz jungfräulichen Gebietes, sonst grossentheils eine verhältnissmässig junge, ja, wohl *sehr* junge Forstwirthschaft; infolgedessen ein noch ungenügend entwickeltes oder unentwickeltes Strassenwesen innerhalb der Forsten, und damit eine schwere und theure Abfuhr der Hölzer.

In Europa ferner: eine dichte Bevölkerung, mithin ein flotter Absatz für das Holz, Rinden und Zweige *an Ort und Stelle.*

In Amerika: eine dünngesäete Bevölkerung, also Mangel an Absatz, langer und kostspieliger Transport der Baumstämme bis zum Verkaufsplatze, während die Wipfel und Zweige der Bäume wegen der ungenügenden Wege und theuren Fortschaffung meist im Walde liegengelassen werden müssen.

Es ist unter diesen Umständen gar nicht möglich, gegen auftretende Waldverwüster, wie solche die Insektenwelt in so grosser Zahl stellt, mit den, beispielsweise in dem forstlich hochentwickelten Deutschland üblichen, *radicalen* Vertilgungsmaassregeln vorzugehen, auf welche einen Blick zu werfen wir uns für einen späteren Aufsatz vorbehalten.

Nun hat die Natur fürsorglich gar wohl darauf gesehen, dass in ihrem Haushalte das Gleichgewicht erhalten bleibe; sie hat deshalb auch dem Ueberhandnehmen der einzelnen Thiere ein Ziel gesetzt, indem sie ihnen Feinde zugesellte. So haben besonders die Insekten, ausser den Vögeln, sehr viele Nachsteller unter ihresgleichen. Da ist die grosse Zahl der Raubinsekten aller Ordnungen, welche als Strassenräuber über alle Kerfe herfallen; dann giebt es besondere Feinschmecker, die sich nur an eine Fleischsorte halten, deshalb allenthalben mit ihrem Nahrungsthiere zusammen vorkommen; und endlich die heimtückischen Schleicher, die entozoïschen Parasiten, welche in so grosser Zahl unter den Hymenopteren und Dipteren sich finden.

Bei der Natur ging der Forstmann in die Lehre. Ratzeburg,[1] der grosse bahnbrechende deutsche Forstentomologe, berichtet von 1868 in Posen (Preussen) vorgenommenen Versuchen mit Uebertragung von Maulwürfen auf von Engerlingen (Larve des Maikäfers) bedrohte Kulturflächen, Versuchen, die nicht ohne Erfolg blieben. Weiter hat derselbe Gelehrte die Waldameise (Formica rufa)[2], sowie Schlupfwespen nach von Schmetterlingsraupen heimgesuchten Gegenden übertragen, und andere Fachmänner sind seinem Beispiele gefolgt. In neuster Zeit hat namentlich C. V. Riley, soviel ich gehört habe, wiederholt Experimente mit der Translocation von Schlupfwespen gemacht.

Wie im July dieses Jahres Mr. Andrew D. Hopkins von der West Virginia Agricultural Experiment Station in Morgantown den Lesern unseres Blattes mittheilte[3], ist in den letzten Jahren in West Virginia der Borkenkäfer, Dendroctonus frontalis Zimm., in solchen Unmassen aufgetreten, dass auf einem Raume von 10,000 square miles 75% aller Nadelbäume krankten oder abstarben.[4] Der genannte Staat gehört aber zu denjenigen, wo eine rationelle Waldkultur, mithin eine rationelle Vertilgung des Borkenkäfers noch nicht möglich ist. Mr. Hopkins fasste deshalb den Gedanken, um wenigstens zu thun, was möglich ist, um dem Waldfeinde entgegenzutreten, nachdem er beobachtet hatte, wie Clerus dubius F. sich alle Mühe gab, mit den Scolytiden aufzuräumen, ihm einen Helfer in seinem guten Werke zur Seite zu stellen.

Europa und Nordamerika haben seit langer Zeit, wie dies der rege Verkehr zwischen beiden Erdtheilen und die Gleichartigkeit des Klimas mit sich bringt, gegenseitig ihre Schädlinge ausgetauscht: ich erinnere an den Kartoffelkäfer (Leptinotarsa decimlineata Say) in Deutschland und an den Kohlweissling

[1] Ratzeburg, Die Waldverder*ber*, 1841, pp. 21, 22.

[2] Ratzeburg, Die Waldverderb*niss*, 1868, II., p. 429.

[3] Science, Vol. XX., No. 495.

[4] Dies wird erklärlich, wenn man die beträchtliche Fruchtbarkeit der Scolytiden kennt. In der Mitteleuropäischen Forstinsektenkunde stellen hierüber Judeich und Nitzsche folgendes Rechenexempel auf: Nehmen wir an, ein Mitte April fliegendes Weibchen habe in seinem Muttergange 90 Eier abgelegt, so können wir mit Sicherheit darauf rechnen, dass im Anfang Juni wenigstens 30 Stück davon zu fortpflanzungsfähigen und wirklich begatteten Weibchen sich entwickeln. Legt jedes dieser 30 Weibchen wieder einen Muttergang mit 90 Eiern an, so produciren sie also zusammen 2700 Stück, und wird Anfang August beim dritten Fluge wieder nur ein Drittel davon zu Weibchen, so nagen diese schon 900 Muttergänge und belegen sie mit 8100 Eiern. Gelangt von diesen wieder nur ein Drittel im nächsten Frühjahre zum Eierlegen, so kommen im April bereits 27,000 Nachkommen des *einen* im vorhergehenden April geflogenen Weibchens zur Fortpflanzung und können nun 2,430,000 Eier ablegen!