

**Cascabel tropical austral / South American Rattlesnake**



***Crotalus cascavella***

"According to José Díaz Bolio, the Ahau Can, or Lordly Serpent taught the Maya about the laws of space and time. He believed that the Maya obtained most of their knowledge about the world "from the mouth of a rattlesnake." The scientific name of the rattlesnake most important of the Maya culture was the *Crotalus durissus durissus*; they called its subspecies the Ahau Can, or "Great, Lordly Serpent."  
(Shannon Dorey, 2004)

"The South American rattlesnake (*Crotalus durissus terrificus*) is surely the most dangerous of all rattlers because of its combination of large size and extremely powerful venom."  
(Laurence M. Klauber, 1982)

"Wird durch die schleunig angewandten Mittel auch den tödlichen Wirkungen des Schlangensbisses vorgebeugt, so schleppt der Verwundete doch sein ganzes Leben hindurch die nachteiligen Folgen mit sich herum und unterliegt denselben oft nach mehreren Jahren. Die Wunde bricht meist alle Jahre wieder auf, und das verwundete Glied bleibt ununterbrochen der schmerzhafteste Wetterprophet."  
(Alfred E. Brehm, 1869)

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## Die Schlange / The Serpent



# Die Schlange / The Serpent

## Übersicht / Overview

Namen

1869 - Die Cascavella - Alfred Brehm

## Namen

*Crotalus durissus terrificus* (Klauber 1936 and others)

*syn.*: *Crotalus cascavella* (Wagler 1824), *Crotalus terrificus* (Boulenger 1896 and others)

*span.*: Cascabel tropical austral, vibora de cascabel austral

*engl.*: South American Rattlesnake

## 1869 - Die Cascavella - Alfred Brehm

"Die südamerikanische Vertreterin der Klapperschlange ist die **Cascavella** der Spanier, der **Schauerklapperer**, wie Prinz von Wied sie genannt hat (*Crotalus horridus* <sup>[1]</sup>), artlich von den Verwandten unterschieden durch die Beschilderung des Kopfes, welche in drei Reihen geordnet ist, oben auf bräunlichgrauem Grunde mit einer Reihe dunkler, weißgelb eingefasster Rautenflecken gezeichnet, unten einfarbig gelblichweiß, an Größe der nordamerikanischen ungefähr gleich.

"Der Schauerklapperer", sagt der Prinz, dem wir eine ausführliche Beschreibung des Tieres verdanken, "ist über den größten Teil Südamerikas verbreitet, bewohnt das ganze innere Brasilien, kommt in Minas Geraës vor und findet sich nördlich bis Guiana und am Marañon." Durch Azara und Burmeister wissen wir, daß er auch im Süden nicht fehlt, namentlich in den Platastaaten allerorten vorkommt, durch Schomburgk, daß er in Guiana ähnliche Örtlichkeiten bevorzugt, wie in Brasilien. "In den höchst feuchten Küstenwäldern", fährt der Prinz fort, "scheint er sich nicht aufzuhalten, vielmehr jenseits derselben, in den trockenen, mehr steinigen Gegenden des Sertong auf rauhen Tristen, noch nicht urbar gemachten Ländereien, in dornigen, steinigen, trockenen und erhitzten Gebüsch etc." In Guiana lebt er in der Savanne und in dem in ihr auftretenden, lichterem, niederen Gebüsch bis zu einer Höhe von sechstausend Fuß über dem Meere, fehlt dort auch ebenso wie in Brasilien den dichten Waldungen der Küste.

Während des Tages begegnet man der Cascavella nur im Zustande der Ruhe. Sie liegt, im Teller zusammengerollt, träge auf einer und derselben Stelle und beißt nur, was ihr unmittelbar zu nah kommt. "Oft hat man", erzählt der Prinz, "auf diese Art an einem Tage mehrere Stücke Rindvieh verloren, welche an einer gewissen Stelle des Weges oder der Weide gebissen wurden; hierdurch aufmerksam gemacht, suchte man nach und fand und tötete die gefährliche träge Schlange.... Kommt man ihr nicht zufällig zu nah, oder bemerkt man sie in der Entfernung von einigen Schritten, so hat man Nichts zu befürchten; denn kurz zuvor sie beißen will, gibt sie durch Schnellen mit dem Schwanze den bekannten, jedoch keineswegs lauten und deshalb nicht weit hörbaren Ton von sich. Es kann indessen dennoch bei der größten Aufmerksamkeit geschehen, daß man einem solchen Tiere zu nah tritt und in den Fuß gebissen wird." Dies begegnet nicht allein den stumpfsinnigen Weißen, sondern, wie Schomburgk erfuhr, auch den Eingeborenen des Landes, deren Falkenauge so leicht nichts entgeht.

"Oft habe ich mich", erzählt letztgenannter Forscher, "der Cascavella oder Maracka der Eingeborenen bis auf sechs oder sieben Fuß genähert und sie ruhig beobachtet. Zwar behielt sie mich dabei fortwährend im Auge, zeigte aber nicht die geringste Neigung zum Beißen. Doch

die mindeste Anreizung, ja sogar eine plötzliche Annäherung versetzt das Tier augenblicklich in Wut. Sich in Schrauben windend, den Hals und Kopf in die Höhe hebend, den Rachen weit aufsperrend und ein ganz eigentümliches Zischen ausstoßend, schaut sie dann zornig umher, den rechten Augenblick zum Bisse erlauernd, verfehlt nur selten ihr Ziel, und selbst die dichtesten Kleider, die stärksten Stiefel werden von den Giftzähnen durchdrungen. Die zitternde Bewegung des Schwanzes verursacht allerdings ein Geräusch; dasselbe ist aber nicht laut genug, um weit gehört zu werden. Mit der dreimaligen Warnung hat es dieselbe Bewandnis wie mit der Bezauberungskraft, welche ihr zugeschrieben worden ist"; d. h. also, die Erzählungen gehören in das Gebiet der Fabel.

Über Ernährung und Fortpflanzung der Cascavella gilt wahrscheinlich Dasselbe, was man an den Verwandten beobachtet hat. Für gesellige Versammlungen während der Paarungszeit spricht eine Angabe Gardner's. Am westlichen Abhange des Orgelgebirges bei Rio de Janeiro hörte derselbe in einem Gehölz ein seltsames Zischen und Rauschen und erfuhr von seinem einheimischen Reisegefährten, daß dasselbe von Klapperschlangen herrühre. Beide bestiegen einen Baum und sahen von da etwa zwanzig in einen Knäuel verschlungene Klapperschlangen, welche mit erhobenem Kopfe zischten und mit den Klappern rasselten. Durch die Pfeile des Brasilianers und die Doppelflinte Gardner's wurden dreizehn Schlangen getötet und noch mehrere schwer verwundete mit Stöcken erschlagen. Im Bauche derer, welche aufgeschnitten wurden, fanden sich Reste von Vögeln und Säugetieren.

Über die Bisswirkung erfahren wir durch Schomburgk das Nachstehende. "Die Sonne", erzählt er, "näherete sich schon dem Horizonte, und Essetamaidu war noch nicht zurückgekehrt, was uns nicht eher auffiel, bis wir einen anderen Indianer in schnellsten Laufe über die Anhöhe herbeieilen sahen; - das sicherste Zeichen einer wichtigen Neuigkeit oder einer Unglücksbotschaft, da sich der Indianer sonst nur in gemessenen Schritten auf ein Dorf zu bewegt. Der Indianer hatte Essetamaidu, von einer Schlange gebissen, besinnungslos in der Savanne liegend gefunden. Mit allen möglichen Hilfsmitteln versehen, eilten wir der Stelle zu, wo der Unglückliche liegen sollte, und fanden ihn auch ohne Bewußtsein dort vor. Eine mit dem Messer auf wahrhaft schauerhafte Weise ausgeschnittene und mit einem Streifen des Schamschutzes verbundene Wunde über dem Knöchel des rechten Fußes zeigte uns die Stelle, wo der Arme gebissen worden war. Das Bein war geschwollen, und die heftigsten Krämpfe durchzuckten den ganzen Körper des Besinnungslosen, den man fast nicht wieder erkannte, so sehr hatten sich in Folge der Krämpfe die Gesichtszüge verändert. Als der Arme Essetamaidu durch die Savanne gegangen war, hatte er auf eine Klapperschlange getreten, in unmittelbarem Rachegefühl sie zunächst getötet und dann erst die Wunde mit einer nur dem Indianer eigenen Gefühllosigkeit ausgeschnitten und verbunden. Da die Verwundung auf der hochgelegenen Savanne stattgefunden, hatte er sich noch mühsam in die Nähe des Pfades geschleppt, wo er eher gefunden zu werden hoffen durfte, und war hier besinnungslos zusammengesunken. Als die Bewohner Piraras uns hatten forteilen sehen, war uns fast die halbe Bevölkerung gefolgt, welche wahrscheinlich auch die Ursache der Eile erfahren hatte und nun, den Unglücklichen schweigsam ansehend, um ihn herumhockte, während die Frau und die Kinder desselben in ein herzbrechendes Jammern ausbrachen. Dem geronnenen Blute nach zu urteilen, mußte die Verwundung schon vor mehreren Stunden stattgefunden haben; ein Ausaugen und Ausbrennen war daher nicht mehr anwendbar, weshalb wir die Wunde bloß mit Ammoniak auswuschen und solchen, mit Wasser verdünnt, dem immer noch Besinnungslosen einflößten. Dieses Mittel schien seine Wirkung nicht zu verfehlen. Die Besinnung kehrte zurück, und der Kranke, welcher über Schmerzen in der Brust- und Achselgegend, sowie über Ziehen in den Gliedern und Rückenweh klagte, wurde in seiner Hängematte nach Pirara getragen.

"Das Bein blieb mehrere Tage bis zum Hüftgelenk hinauf zu einer unförmlichen Masse angeschwollen und völlig unbeweglich; dabei fühlte der Leidende bei der leichtesten Erschütterung die unerträglichsten Schmerzen. Nach drei Wochen hatte ein warmer erweichender

Umschlag von Cassadabrot nicht nur die Geschwulst, sondern auch den leichenartigen Ausdruck des Gesichts und die Schmerzen vertrieben; nach Verlauf von fünf Wochen schloss sich auch die Wunde, und der Kranke konnte den Fuß wieder gebrauchen.

"Wird durch die schleunig angewandten Mittel auch den tödlichen Wirkungen des Schlangengbisses vorgebeugt, so schleppt der Verwundete doch sein ganzes Leben hindurch die nachteiligen Folgen mit sich herum und unterliegt denselben oft nach mehreren Jahren. Die Wunde bricht meist alle Jahre wieder auf, und das verwundete Glied bleibt ununterbrochen der schmerzhafteste Wetterprophet.

"Außer den allgemein üblichen Mitteln: Ausschneiden und Ausaugen der Wunde, sowie frischer Saft vom Zuckerrohr, dessen Genuß nach Aussage der Indianer auch ein sicheres Mittel bei Verwundung mit dem Giftpfeil sein soll, besitzt noch jeder Stamm seine eigentümlichen Arzneien, von denen man allerdings eine große Anzahl den eingebildeten zuzählen muß. So dürfen bei einigen Stämmen weder der Verwundete, noch seine Kinder, noch seine Eltern und Geschwister, sobald solche mit ihm eine und dieselbe Niederlassung bewohnen, die erste Zeit nach seiner Verwundung Wasser trinken oder sich baden oder nur in die Nähe des Wassers kommen; einzig seiner Frau ist Dies gestattet. Ein dünner Kürbispbrei, der aber nur warm genossen werden darf, muß den Durst stillen, und geröstete Pisangfrüchte sind die einzige Nahrung, welche ihm während dieser Zeit erlaubt ist. Hat der Gebissene nach der Verwundung Zuckerrohrsaft genossen, so muß er später alles Süße vermeiden. Andere Stämme glauben in Frauenmilch ein wirksames Gegengift entdeckt zu haben und wenden sie im Verein mit erweichenden Umschlägen aus Cassadabrot an, wieder andere den ausgepressten Saft der Blattstengel und Wurzeln des *Dracontium dubium*. Ziemlich allgemein verbreitet gegen den Biß der Klapperschlange ist die Anwendung eines Absudes der *Byrsonima crassifolia* und *Moureila*, und außer der schon erwähnten Aroïdea, die derselben Familie angehörende *Quebitea guianensis*. Doch scheint die heilsame Wirkung aller dieser Mittel vielfach durch die Körperbeschaffenheit des Verwundeten bedingt zu sein, da Frauen und schwächliche Männer nur höchst selten mit dem Leben davon kommen."

"Die Brasilianer", bemerkt der Prinz, "kennen, wenngleich ihre Kur mit mancherlei abergläubischen Vornahmen, Gebeten, Formeln und dergleichen verbunden sind, einige wichtige Hauptmittel gegen den Schlangenbiß. Hierher gehören: das Ausschneiden und Ausbrennen der Wunde, sowie mancherlei Kräuteraufgüsse, welche man als Aufschläge oder innerlich anwendet, und welche im letzteren Falle gewöhnlich schweißtreibend wirken. Dieser gegen den Schlangenbiß gebrauchten Pflanzen hat man eine bedeutende Anzahl; hierher gehören mehrere Arten der *Aristolochia*, *Bignonia*, *Jacaranda*, z. B. das *Angelim branco*, die *Plumeria*, die *Verbena virgata* u. a. m., deren ein jeder Rathgeber in solchen Fällen gewöhnlich andere und immer bessere kennen will. Man schabt und quetscht die Wurzeln, Blätter und Früchte, gibt sie ein und legt sie äußerlich auf; manche sind gut, um die Wunde zu reizen, andere, wohl die meisten, schweißtreibend u. s. w...." In seiner Reisebeschreibung erzählt der Prinz mehrere Fälle, in denen von Schlangen Gebissene geheilt wurden. Einem jungen Puri umband man den gebissenen Fuß, schnitt und saugte die Wunde aus und gab ihm innerlich anstatt eines anderen schweißtreibenden Mittels Branntwein ein. "Nach mehrmaligem Ausbrennen mit Schießpulver legte man den Kranken in ein Schlafnetz und streute gepulverte spanische Fliege in die Wunde. Der Fuß schwoll sehr an. Ein eben anwesender Bergmann brachte zwei Wurzeln, welche er sehr rühmte; die eine war schwammig und geschmacklos, wurde deshalb auch verworfen; von der anderen, welche sehr bitter war und die der *Aristolochia* ringens zu sein schien, wurde ein starker Tee gemacht. Ob ein erfolgtes Erbrechen von dem Tee, dem Branntwein oder von dem Schlangengifte selbst herrührte, ist schwer zu entscheiden. Nach einer ruhigen Nacht waren Fuß und Schenkel bis zum doppelten Umfange angeschwollen, der Kranke aber so gereizt, daß er beim geringsten Geräusch schrie und weinte. Da er Blut aus der Wunde warf, gab man ihm kein Mittel mehr; auf den Fuß wurden ihm Blätter, wahrscheinlich der

Plumeria obovata gelegt, welche der Kranke sehr lobte, weil sie ihn außerordentlich kühlten. In die Wunde streute man ein Pulver aus der Wurzel dieser Pflanze. Er genas nun bald.

"Auf einer kurzen Reise in der Nähe von Rio de Janeiro fand her Sellow einen von einer Schlange gebissenen Neger vollkommen erschöpft auf der Erde liegen. Sein Gesicht war aufgetrieben; er atmete heftig und sollte aus Mund, Nase und Ohren geblutet haben. Man gab ihm das Fett des großen Teju ein; vorher hatte man innerlich und äußerlich einen Tee von einer Verbena gegeben, welche den Schweiß befördern soll.

"Das Mitgeteilte wird einen Begriff von den unter brasilianischen Landbewohnern üblichen Kuren solcher Kranken geben. Es ist dort überhaupt wie bei uns: Jeder kennt ein anderes Mittelchen, welches Vorzüge vor dem des Anderen, welches gewiß hilft und auch wohl geheim gehalten wird. Besonders empfohlen wird das Abbeten einer gewissen Anzahl "Vaterunser, Ave Maria" u. s. w...."

Indianer und Neger behaupten, demselben Forscher zu Folge, daß der Biss der Klapperschlange und einer Giftschlange überhaupt am gefährlichsten sei, wenn das Wetter heiß ist, und wenn die Schlangen trächtig sind, wenn sie sich häuten und bei Mondveränderung. Sie und die Brasilianer sagen auch, daß die Schlangen das Gift von sich speien, wenn sie trinken wollen, daß ein durch Schlangenbiß Verwundeter während seiner Kur den Anblick weiblicher Wesen vermeiden müsse, daß das Gift lange seine Wirksamkeit behalte, und erzählen davon mancherlei, oft komische Beispiele. Die bekannte Geschichte von dem Stiefelpaare, welches einer Frau zwei Männer raubte und noch einen dritten tötete, weil die bei dem Biss der Klapperschlange abgebrochenen Zähne in ihm stecken geblieben waren, läuft unter den Brasilianern wie unter den Nordamerikanern von Mund zu Munde und wird selbstverständlich ohne Widerspruch gläubig hingenommen.

Über die Feinde der Cascavella teilt uns weder der Prinz, noch Schomburgk Etwas mit; doch dürfen wir wohl annehmen, daß einige Marderarten und die als Schlangenfeinde bekannten Raub- und Sumpfvögel mancher von ihnen den Garaus machen werden, da ja, wie wir erfahren haben, sogar Hauskatzen sie mit Erfolg befehlen. Der Mensch tötet sie, wo er sie findet, ohne sie weiter zu benutzen. Kein Südamerikaner ißt Schlangenfleisch, nicht einmal der wilde Indianer. Die Schwanzklapper dagegen wird, laut Angabe des Prinzen von Wied, nicht weggeworfen, wenn der Zufall zu ihrem Besitz führt, vielmehr öfters gut bezahlt, weil man sie für ein wirksames Mittel in mancherlei Krankheiten ansieht.

In Südamerika machen nur die Neger sich das Vergnügen, giftige Schlangen zu halten. "Die Kunst, solche Schlangen zu zähmen", sagt Schomburgk, "scheinen die Neger mit aus ihrem Vaterlande herübergebracht zu haben, da es bei ihnen nichts Seltenes ist, daß sie Klapperschlangen, ohne ihnen die Fänge auszureißen, so abzurichten verstehen, daß sie sich ihrem Meister ohne Gefahr um die Arme schlingen und mit ihm auf dem freundschaftlichsten Fuße leben."

(A. E. Brehm, Illustriertes Tierleben, Fünfter Band, Hildburghausen 1869, S. 330-334)

[<sup>1</sup> Brehm bezeichnete die nordamerikanische Klapperschlange als *Crotalus durissus* und die Cascavella als *Crotalus horridus*. Heute verwendet man die Bezeichnungen genau umgekehrt: die Cascavella ist also *Crotalus durissus (terrificus)*]



## **Giftwirkung und Bissfälle / Toxic Effects and Cases of Bites**



## **Giftwirkung und Bissfälle / Toxic Effects and Cases of Bites**

### **1873 - Toxical Effects of the Poison of the Crotalus Cascavella of Brazil - S. B. Higgins**

"The wound was inflicted in one of the fingers of a man's hand. The snake measured two and a half metres in length.

(1) Swelling of the hand, and drops of blood escape from the wound.

Pain in the palm of the hand, which extends up to the wrist.

At the expiration of one hour from the injection of the poison, the hand is exceedingly swollen, accompanied by a sensation of cold, which is also felt in the lower extremities.

Pulse strong; increases at intervals from 110 to 140 per minute.

(5) Sensation of plenitude in the jugular veins, which is soon felt in the sides of the throat and nape of the neck.

Feels a blur before his eyes.

A crawling sensation in the face.

Expiration of 1 hour and 30 minutes.

Pain and oedema extend from the hand nearly up to the elbow.

The whole body seems to fill itself up.

Expiration of 1 h. 20 m.

(10) Visible tremors in whole body.

Unpleasant sensation in the head.

Pulse accelerated.

Feels it difficult to move the lips.

Inclination to sleep.

(15) Sensation of constriction in the throat.

Swelling of the hand continues.

The entire arm is swollen and very painful.

Expiration of 1 h. 38 m.

He feels cold, and desires to cover himself.

Expiration of 1 h. 48 m.

Feels a pain in the oesophagus, which extends to the stomach and abdomen.

(20) Sensation of cold in the feet.

Expiration of 2 h. 5m.

Feels it difficult to speak.

Expiration of 2 h. 25 m.

Swallows with difficulty.

Anxiety.

Copious perspiration in the chest.

Expiration of 2 h. 50 m.

(25) Swelling of the arms; slight epistaxis.

Inquietude and anxiety increases.

Pulse 96.

Expiration of 3 h. 4 m.

General perspiration.

Involuntary groans and moaning.

(30) Feels exceedingly downcast.

Pulse 100.

Expiration of 3 h. 15 m.

Pains in the arms; inquietude.

Expiration of 3 h. 30 m.

Pulse 98.

Face much flushed.

(35) Flow of blood from the nose.  
The whole body is flushed and red.  
The blood starts from a pustule in the armpit.  
Expiration of 4 h.  
Body a much darker red.  
Unbearable pains in the thorax; patient excessively prostrated.  
(40) Constriction in the throat; respiration difficult.  
Expiration of 4 h. 30 m.  
Pulse 104; great pain in the surface of the whole body.  
Salivation.  
Expiration of 5 h. 30m.  
Pulse 104.

Has a feeling of stupidity.  
(45) Abundant discharges of urine.  
Saliva thick, dark-colored, viscous ; spite with difficulty.  
Muscular prostration.  
The pains cause frequent groans.  
Respiration easy.

(50) The skin is moist.  
Expiration of 7 h.  
Somnolency and groans.  
Pains in the breast and arms cease.  
Sensation as if a knot in the throat.  
Copious urinary discharges.

(55) Deglutition difficult.  
Saliva whitish, viscous.  
Flow of sanguinolent serosity from the nostrils.  
Expiration of 9 h. 15 m.  
Profound sleep.

The preceding table indicates that the person bitten was of a strong physique, and the venom did not have its deadly principle fully developed. In extreme cases, death ensues in from one to four hours - sometimes sooner.

Immediately after the injection of the poison, there is a sudden increase in the rapidity of the circulation of the blood; sharp pains in the chest, throat, and limbs; much oedema of the part bitten; sensations of flushes of heat in whole body, followed by ice-cold chills; abundant epistaxis; discoloration of the finger and toe-nails, and flow of blood from under them; blood flows from the gums, roof of the mouth, and from the urinary canal; the pulse rises suddenly to 140 or 160, and as suddenly lowers to 75 or 80, to rise again to 100 or 105; surface of the skin becomes red; soon after it changes to a purple hue; oppression in the chest is felt; great muscular debility ensues, which is superseded by a state of coma; patient rouses slightly, complains of inability to distinguish objects around him; relapses into the comatose condition; a bloody or dark-colored or greenish froth is noticed on the lips, and death ensues immediately thereafter.

Dr. Weir Mitchell's conclusions as to the great similarity between the action of one serpent's venom and that of another of a different genus, are quite contrary to the experience of every person who has had to cure many cases of snake-bite; so much so, in fact, that, as a general rule, an experienced curer will detect indications in the person bitten which will enable him to name the kind of snake which caused the wound."

(S. B. Higgins, Ophidians, 1873, p. 112-115)

[Note: The enumerated symptoms are taken from Mure, Pathogénésie brésilienne, 1849, p. 321-322]

# Prüfungen / Provings

Publication de l'Institut Homéopathique du Brésil.



*Mme, Benoît  
Jules, 1809-58*

## DOCTRINE DE L'ÉCOLE DE RIO DE JANEIRO ET PATHOGÉNÉSIE BRÉSILIENNE

CONTENANT

UNE EXPOSITION MÉTHODIQUE DE L'HOMÉOPATHIE,  
LA LOI FONDAMENTALE DU DYNAMISME VITAL,  
LA THÉORIE DES DOSES ET DES MALADIES CHRONIQUES,  
LES MACHINES PHARMACEUTIQUES, L'ALGÈBRE SYMPTOMATOLOGIQUE,  
LA CLASSIFICATION PHILOSOPHIQUE DES ESPÈCES MÉDICINALES,  
ET TRENTE-SIX EXPÉRIENCES PURES.

ET ORIENTUR VOBIS SOL MEÆ JUSTITIÆ..... ET SANITAS, UNUS EX RADIS EIJ5.



**PARIS,**

A l'Institut Homéopathique, rue de La Harpe, n° 93;

**RIO DE JANEIRO,**

Rue de S.-José, n° 59.

1849

# Prüfungen / Provings

## Übersicht / Overview

1849 - Pathogénésie de Crotalus cascavella - Benoît-Jules Mure

1876 - Symptom Register - Timothy F. Allen

## 1849 - Pathogénésie de Crotalus cascavella - Benoît-Jules Mure

"Ce serpent redoutable se trouve dans la province du Céara, d'où il fut apporté à Rio de Janeiro. Quoique la longueur commune de cette espèce soit de cent à cent vingt centimètres, l'individu sur lequel le venin fut recueilli atteignait deux mètres cinquante centimètres. Sa tête ovalo-triangulaire, demi-scutellé, présente une fossette ronde au devant des yeux, qui sont couverts par une grande scutelle elliptique formant la plaque sourcilière. Le corps est gros, conique, se mouvant avec peu d'agilité; il est couvert d'écailles en dessus, les dorsales sont carénées, sublancéolées; celles de la queue quadrangulaire et plus petites. Le ventre est pourvu de cent soixante et dix grandes plaques transversales. Les caudales, au nombre de vingt-cinq, dont les trois premières sont divisées en scutelles. L'extrémité de la queue est munie de sept à huit capsules parcheminées, produisant un bruit strident par l'agitation. La couleur du Crotalus est d'un brun jaunâtre, beaucoup plus claire sous l'abdomen et marquée, de chaque côté du dos, de vingt-quatre à vingt-six grandes lignes rhomboïdales régulières. Lorsqu'on l'irrite et pendant les grandes chaleurs, il répand une odeur de musc très-fétide. Les dents maxillaires peu nombreuses, très-grandes et toutes vénéneuses, sont portées par des mâchoires très-dilatable. L'effrayante activité du venin de ces serpents est trop connue pour que nous ayons besoin d'insister sur ce caractère; ce ne fut qu'en courant les plus grands dangers que MM. Mure et Martins parvinrent à en obtenir quelques gouttes, en comprimant, sur l'animal vivant, la glande qui le renferme.

### Piqûre au doigt.

(1) Enflure de la main et gouttes de sang de la blessure.

Douleur dans la paume de la main, qui s'étend jusqu'au poignet.

Après une heure la main enfle prodigieusement, et sensation de froid ainsi que dans les jambes et les pieds.

Pouls plein, qui se prolonge jusqu'à 110 et 140.

(5) Sentiment de plénitude dans le trajet des jugulaires, qui ensuite s'étend aux côtés et derrière la nuque.

Altération de la vue.

Fourmillement à la face.

Après une heure et demie la douleur et le gonflement s'étendent aux deux tiers de l'avant-bras.

Engourdissement de tout le corps.

(10) Une heure vingt minutes, tremblement visible de tout le corps.

Trouble de la tête.

Pouls fréquent.

Difficulté de mouvoir les lèvres.

Propension au sommeil.

(15) Sentiment de constriction dans la gorge.

La main continue à gonfler.

Le bras entier est gonflé et douloureux.

Une heure trente-huit minutes, le malade a froid et se couvre.

Une heure quarante-huit minutes, douleur à la langue et dans le gosier qui se propage jusqu'au ventre.

(20) Sensation de froid aux pieds.

Deux heures cinq minutes, difficulté de parler.

Deux heures vingt-cinq minutes, difficulté d'avalier.

Anxiété.

Sueur copieuse à la poitrine.

(25) Deux heures cinquante minutes, engourdissement des bras, gouttelettes de sang par les narines.

Inquiétude et anxiété augmentée.

Pouls à quatre-vingt-seize.

À trois heures quatre minutes, sueur générale.

Gémissements involontaires.

(30) Abattement.

Pouls à cent pulsations.

Trois heures un quart, douleurs dans les bras, inquiétude.

Trois heures et demie, pouls à quatre-vingt-dix-huit.

Rougeur du visage.

(35) Sang par le nez.

Rougeur de tout le corps.

Le sang sort par une pustule sous le bras.

Quatres heures, la rougeur tend à être plus foncée.

Douleurs plus fortes dans les membres thoraciques, qui ne laissent aucun repos au malade malgré son profond accablement.

(40) Constriction de la gorge. Respiration gênée.

Quatres heures et demie, pouls à 104. Grande douleur à toute la surface du corps.

Salivation.

Cinq heures et demies, pouls dans le même état.

Torpeur.

(45) Urines abondantes.

Salive épaisse, visqueuse et foncée, qui sort avec peine de la bouche.

Prostration musculaire.

Les douleurs arrachent des gémissements fréquents.

Respiration tranquille.

(50) La peau est moite.

Sept heures, somnolence et gémissements.

La douleur de poitrine et celle des bras s'apaisent.

Sensation d'un nœud dans la gorge.

Urine copieuse.

(55) Déglutition difficile.

Salive blanche et visqueuse.

Sérosité sanguinolente coulant par le nez.

Neuf heures un quart, sommeil.

### **Première expérience.**

*Premier jour.* - Douleur gravative dans le fond de l'orbite et sur la paupière gauche.

(60) *Deuxième jour.* - Douleur sous l'orbite droite et sur le front à droite.

*Troisième jour.* - Toux sèche par chatouillement dans la gorge, la nuit.

*Quatrième jour.* - Céphalalgie qui envahit le front, puis le reste de la tête.

*Cinquième jour.* - Odeur, toute la journée, comme celle du crotalus même, fade, nauséuse, ressemblant à celle d'un hôpital.

*Sixième jour.* - Élançements dans diverses parties du corps.

(65) *Septième jour.* - Contraction pressive sur le globe de l'œil droit, qui semble tiré en dehors.

*Huitième jour.* - Diarrhée jaunâtre.

*Neuvième jour.* - Douleur au milieu du front.

*Dixième jour.* - Douleur rhumatismale dans l'épaule droite.

*Onzième jour.* - Douleur rhumatismale dans le poignet gauche.

(70) *Douzième jour.* - Crampes violentes dans le talon.

### **Deuxième expérience.**

Le médicament est pris à dix heures du soir.

Crachement de sang noir.

Picotement par tout le corps.

Soubresauts pendant le sommeil.

Insomnie.

(75) Effroi, la nuit, de choses indéterminées.

Sommeil le matin.

La pointe du nez est tirée en haut comme par une corde qui suivrait sa ligne médiane et

viendrait s'attacher à un point central du front.

Fourmillement dans la gorge, comme de la bière qui y pétillerait.

Bouche très-salée, on boit de l'eau sucrée inutilement.

(80) Pouls un peu lourd.

Apparition de petits boutons rouges coniques au poignet.

Tiraillement douloureux sur les parties latérales du cou en tournant la tête.

Sentiment de froid dans l'estomac, après avoir mangé.

Sensation d'une cheville à partie moyenne du foie.

(85) Douleur pressive à la gencive gauche.

Douleur comme un cercle autour du ventre, qui se ferme au nombril.

Élancements sous l'aisselle droite, comme deux coups de poignard successifs qui ôtent la respiration et répondent dans la poitrine.

Sensation d'un grain de sable dans l'angle externe des yeux.

Pincement brûlant au pyllore.

(90) Constriction dans la glande thyroïde.

Sensation de raccourcissement dans la jambe droite, depuis la hanche jusqu'au talon, et claudication produite par l'illusion que la jambe est plus courte.

L'œil gauche est comme tiré du côté de la tempe.

Brûlement et constriction dans la gorge.

**Deuxième jour.** - Douleur dans l'intérieur de la tête.

(95) Froid des pieds.

Faiblesse des bras.

Sensation de contusion à la partie interne de l'omoplate droite.

Pesanteur douloureuse aux lombes.

Éblouissements de couleur bleue.

(100) Borborygmes.

Pression douloureuse dans les tempes.

Envie de vomir.

Sensation des plaies internes, sous les seins.

Élancements comme par des épingles dans l'épine dorsale.

(105) On croit entendre marcher derrière soi.

Toute la boîte osseuse du crâne serre le cerveau comme un casque de fer.

Tiraillement au creux de l'estomac.

Démangeaison aux cuisses.

Prurit aux oreilles.

(110) Gonflement de l'oreille droite.



Surdit .

R ves de soir es avec illuminations. Querelles, batailles.

C phalalgie frontale, comme si la t te allait  clater, et pesanteur sur les yeux, surtout la nuit.

Mal d'estomac qui correspond jusqu'au nombril.

(115) Fatigue des bras et des jambes.

Cuisson aux narines.

Sensation de coupure circulaire, comme si l'on enlevait le globe de l' il avec un canif.

Douleur dans la joue gauche.

Sueurs et faiblesse apr s avoir mang .

(120) Crachement verd tre le matin.

Sensation d'un  tre vivant, qui marcherait circulairement dans la t te.

Secousses dans le cerveau   faire perdre l' quilibre.

Fr missement continu des paupi res, surtout de la gauche.

 cume d'un sang noir autour des l vres, le matin.

(125) Langue rouge  carlate.

Tressaillement dans les doigts.

Douleur dans le coude, comme si les os  taient tirill s.

Sensation d'un fil qui roule dans l' il et tiraille le globe du c t  de la tempe.

Tiraillement aigu dans la cuisse, avec paralysie momentan e dans le membre pelvien droit.

(130)  lancements tr s-aigus dans la tempe droite.

Grande soif.

Mal de ventre apr s avoir bu.

Pression de tout le ventre vers le nombril.

Sensibilit  excessive du ventre.

(135) Grande envie de manger, qui passe subitement   la vue des aliments.

D goût de la viande.

Le tour des yeux jaune et cern .

Apr s effort et t nesme on rend par l'anus des glaires comme des blancs d' ufs.

Sortie du rectum pendant dix minutes.

(140) Douleur dans le creux de la main.

**Troisi me jour.** - Douleur dans la poitrine, qui traverse jusqu'au dos.

Sensation d'une ouverture au creux de l'estomac o  il passerait de l'air.

Insomnie avec agitation.

C phalalgie comme si le front allait  clater.

(145) C phalalgie, saignement de nez, et  motion violente pour avoir  t  r veill  en sursaut.

R traction de la jambe depuis la hanche jusqu'aux pieds, et douleur crampo de.

Flueurs blanches.

Petits boutons sur le cuir chevelu.

Les doigts des pieds restent courbés.

(150) Rougeur des ongles.

Sensation d'eau dans la poitrine, avec efforts pour vomir et défaillance comme si le cœur plongeait dans un liquide.

Bâillements continuels.

Démangeaison à la langue.

Cuisson au bout des doigts.

(155) Sensation de poussière dans la gorge.

Les boutons commencent par un point rouge à la peau comme une piqûre de puce, puis ils s'élevèrent en cône, deviennent le centre d'une exfoliation moins étendue que celle causée par l'*Elaps corallinus* et au milieu de laquelle persiste un petit point noir.

Démangeaison au coin de l'œil.

Sensation vive d'une brûlure et rougeur de la peau, qui est sensiblement déprimée à l'ouverture de la narine droite.

On croit entendre des gémissements.

(160) Compression du buste et de la tête comme dans une armure de fer.

Sensation de liens autour du ventre.

Douleur dans les coudes.

En remuant le cou, douleur dans les jugulaires.

Mucosités abondantes coulant par la narine droite, la nuit.

(165) Goût putride et d'oignons dans la bouche jusqu'à ce qu'on l'ait rincée.

Brûlure et picotement au bout de la langue.

Défaillance qui est soulagée par l'air libre.

Anorexie tout le jour et grand appétit le soir.

Douleur au-dessus du sein à droite.

(170) Le bol alimentaire tombe tout d'un coup dans l'estomac et reste comme une pierre avec douleur jusque dans le dos.

Point dans le côté gauche lorsqu'on prend sa respiration après avoir bu.

Élancements dans le côté.

**Quatrième jour.** - Violents élancements dans la matrice en se lavant avec de l'eau froide; élancements terribles si elle est chaude, pesanteur sur l'utérus.

Démangeaison sous les pieds.

(175) Fourmillement dans les pieds jusqu'à la malléole.

Picotement comme des aiguilles dans les jarrets.

Délabrement d'estomac.

Poids énorme à la région hypogastrique.

Dans un état de clairvoyance on parle à quelqu'un qui ne vous répond pas.

(180) La nuit, sentiment de crainte.

On sent d'abord le sang qui remonte dans les artères carotides à plusieurs reprises, puis un sentiment de défaillance, et enfin tout d'un coup comme une soupape qui s'ouvre.

Coup violent à l'épigastre.

Tremblement de tous les membres.

Froid général que les couvertures ne peuvent faire cesser.

(185) Grand mal de tête au vertex et sensibilité au cuir chevelu en le touchant.

Extinction de voix.

Grande faiblesse.

Abattement, tristesse.

Étouffement et crainte d'une autre attaque.

(190) Sensation d'un fer rouge implanté dans le vertex.

Pesanteur des paupières.

Douleur dans les gencives inférieures, comme si elles avaient été touchées par un fer rouge.

Poids énorme au diaphragme.

Douleur de contusion continue entre les deux épaules, et quelquefois élancements lents et mesurés en se penchant en arrière, comme si une vertèbre était fracturée.

(195) Douleur constrictive comme un cordon qui lierait la glande thyroïde.

**Cinquième jour.** - Après avoir mangé, froid dans le dos.

Traction du cou à l'épigastre.

Douleur dans la clavicule droite.

Pesanteur sur les orbites, la nuit.

(200) Froid glacial aux pieds.

Mal de tête sur les yeux, à dix heures du matin.

Maux d'estomac en mangeant, comme par vacuité.

Il semble que le cœur palpite de haut en bas.

Douleur intérieure entre les deux épaules.

(205) Ulcération dans l'intérieur du nez.

L'idée de la mort poursuit en tous lieux, surtout quand on est seul.

On ne pense qu'à la mort avec grande tristesse.

On a envie de pleurer et l'on ne peut pas.

Élancements dans le conduit auditif.

(210) Métorrhagie vermeille.

Paralysie de la langue, on ne peut parler.

Pendant six minutes elle monte sur la croisée, et on la retient au moment où elle veut se précipiter.

À trois heures elle se lève tout d'un coup en poussant deux cris aigus et se jette en avant.

La métrorrhagie vermeille qu'elle avait depuis le matin est subitement suspendue.

(215) Larmes abondantes.

Froid des mains.

Tremblement des mains.

Manque absolu de mémoire.

Deuxième attaque à six heures, puis elle s'assoit dans un fauteuil.

(220) Front brûlant.

Palpitations de cœur.

Pleurs.

Elle joue comme un enfant avec ses doigts.

L'étouffement augmente.

(225) État zoomagnétique, elle n'entend rien et voit de nouveau le fantôme de la mort. Squelette immense, noir, décharné. Ses pleurs et sa démence redoublent.

Yeux hagards.

Points pressifs dans le ventre.

*Sixième jour.* - Douleur ostéocope et gonflement de la clavicule gauche.

On rêve d'un cheval qui se baigne dans une mare d'eau et se noie graduellement.

(230) Gémissements plaintifs pendant le sommeil.

On se sent tomber du lit même pendant la veille.

Grand mal de reins à l'articulation sacro-lombaire.

Perte de connaissance, on n'entend plus, on ne voit plus.

Froid dans le dos.

(235) Oppression; il lui semble que l'air manque dans la maison.

Contraction des doigts des pieds.

Grande envie de prendre de la neige, sans désirer de l'eau ni du vin.

Démangeaison à l'épigastre.

Ardeur dans les cuisses.

(240) Elle s'écrie à plusieurs reprises: Il est dans la fosse aux lions, mais ils ne le mordront pas.

Le soir, à six heures, nouvel accès de démence. État zoomagnétique dans lequel elle ne répond pas aux questions, mais entend une voix étrangère à gauche et en arrière; elle la suit, et se heurte contre les portes qu'on a fermées, en les rayant de ses ongles.

Trois attaques à peu près pareilles se succèdent. Quelquefois elles sont interrompues par des rires niais et finissent toujours par un torrent de larmes.

Elle s'écrie de nouveau: Il est dans la fosse, mais les lions ne mangeront pas.

*Septième jour.* - Défaillance par la faim avant de manger.

(245) Douleur contusive à l'occiput.

Somnolence toute la matinée.

Nouvel accès d'aliénation mentale, on entend des voix que l'on suit, pleurs abondants.

Tête lourde et stupeur.

L'extrémité humérale de la clavicule gauche continue à gonfler.

(250) Métorrhagie très-rouge intermittente deux fois par jour et alternant avec les attaques de démence.

Émission involontaire d'urine en dormant.

Douleur transversale à la région ombilicale, avec sensation d'écartement et de pincement alternatifs.

Gonflement des trois derniers doigts du pied gauche.

Excoriation et pustules purulentes sur les orteils du pied gauche.

(255) Étouffement.

Douleur dans les os surtout des articulations, aux omoplates, aux coudes, aux phalanges des doigts de la main, aux genoux, à la hanche, sous les ongles des pieds.

Pression sur la hanche droite, comme une lame de couteau.

La métorrhagie disparaît.

On ne peut sentir quelqu'un à sa droite sans avoir des battements de cœur, et une fatigue réelle de plaisir.

(260) *Huitième jour*. - On rêve d'araignées énormes, velues comme des mygales, qui veulent vous atteindre et monter sur vous.

Douleur comme des élancements dans le grand psoas.

Étouffement.

Entre les deux seins tache circulaire noire à la partie supérieure, rouge en dessous.

Taches des rousseurs d'un jaune vif, ou éphélides sur le dessus de la main droite.

(265) Petits boutons rouges au pied gauche, comme ceux qu'on a eus à la main le deuxième jour.

Grande constipation.

Élancements, comme des coups de couteau dans la matrice et l'anus, surtout en lavant avec de l'eau froide.

Douleurs dans le bas-ventre en buvant froid.

Sensibilité excessive de l'épigastre; on ne peut y supporter aucun vêtement.

(270) Agacement et sensibilité des dents molaires.

Après avoir déjeuné, vomissement pour avoir bu de l'eau tiède.

Bouffées de chaleur à la face.

Violente démangeaison aux mollets.

Petits boutons rouges avec un point blanc.

(275) En buvant de l'eau froide, les veines du jarret sont d'un noir foncé.

Bourdonnement dans les oreilles en descendant des escaliers.

*Dixième jour.* - Mal de dents, la nuit, dans les molaires supérieures, avec inflammation des gencives.

Crachement de sang mêlé à des mucosités épaisses.

Rêves de morts et d'apparitions.

(280) Dégoût pour les aliments.

Après un mois, grande surdité.

Elle croit sentir ses yeux tomber.

Petites douleurs sous les sourcils.

Mucosités blanches par la bouche.

(290) Saignement au nez d'un sang clair.

Les dernières phalanges sont comme cassées.

Le bout des doigts est bleu.

Les ongles sont déchaussés.

Teint jaune.

(295) Douleur dans le côté gauche.

Malaise pour avoir ses règles, et mauvaise humeur les ayant.

Répulsion pour la parole.

Susceptibilité.

Envie de changer de place.

(295) A toutes les questions elle répond non.

Petits boutons rouges par tout le corps.

Serrement de la tête, du haut.

Crampes dans les bras, comme si les nerfs étaient noués dans les saignées."

(Benoît-Jules Mure, *Doctrine de l'école de Rio de Janeiro et Pathogénésie brésilienne*, Rio de Janeiro 1849, p. 320-331)

## 1876 - Symptom Register - Timothy F. Allen

*Crotalus cascavella* of Mure (species uncertain).

*Preparation*, Trituration of the virus with sacch. lactis.

*Authorities*. [1], Mure, *Pathogénésie Brésilienne*, p. 322; provings on a female with the virus; [2], *ibid*, p. 321 (Maïa and Reis, *Gaz. de Paris*, Jan 5th, 1839); effects of a bite on the finger;

### MIND.

#### *Emotional.*

Magnetic state; she hears nothing, and again sees the spectre of death, as a gigantic black skeleton. Her weeping and mania increase (fifth day), [1].

At 6 o'clock in the evening, another maniacal paroxysm. Magnetic state, in which she does not answer questions, but hears a strange voice to her left, and behind her; she follows it, throws herself against closed doors, and scratches them with her nails. Three very similar attacks succeed each other; they are occasionally interrupted by silly laughter, and always end with a flood of tears. She again cries out; "He is in the den, but the lions will not eat him" (sixth day), [1].

She exclaims, several times, "He is in the lion's den, but they will not bite him" (sixth day), [1].

Another attack of mental alienation; she hears voices, which she follows; with copious tears (seventh day), [1].

She stands for ten minutes on the window-sill, and is arrested when on the point of throwing herself off (fifth day), [1].

She fancies her eyes are falling out (tenth day), [1].

He fancies he hears groans (third day), [1].

He fancies he hears some one walking behind him (second day), [1].

While in a clairvoyant state, he speaks to some one who does not answer (fourth day), [1].

(10) She plays with her fingers like a child (fifth day), [1].

Aversion to talking (tenth day), [1].

Weeping (fifth day), [1].

The pains extort frequent groans (after five hours and three-quarters), [1].

Involuntary groans (after three hours and a quarter), [2].

She rises suddenly at 3 o'clock, uttering two shrill cries, and throwing herself forward (fifth day), [1].

Depression; sadness (fourth day), [1].

Dejection (after three hours and a quarter), [2].

Her thoughts dwell on death; with great sadness (fifth day), [1].

Thoughts of death haunt her everywhere, especially when alone (fifth day), [1].

(20) She longs to weep, but cannot (fifth day), [1].

Anxiety (after two hours and a half), [2].

Feeling of fright, at night (fourth day), [1].

Fright at night about indefinite things, [1].

Sensitive mood (tenth day), [1].

She answers all questions with "no" (tenth day), [1].

#### *Intellectual.*

Total loss of memory (fifth day), [1].

Loss of consciousness; she neither sees nor hears (sixth day), [1].

### HEAD.

The head is affected (after one hour and a half), [2].

Head feels heavy, with stupor (seventh day), [1].

(30) Sensation as if something alive were walking inside the head in a circle (second day), [1].  
Pain in the inner head (second day), [1].  
Tightness of the head from above (tenth day), [1].  
The entire skullcap compresses the brain like an iron helmet (second day), [1].  
Headache, epistaxis, and great excitement, caused by starting out of her sleep (third day), [1].  
Shocks in the head which almost throw her off her balance (second day), [1].

### ***Forehead.***

Pain in the middle of the forehead (ninth day), [1].  
Frontal headache, as if the head would split, with weight above the eyes, especially at night (second day), [1].  
Headache attacking the forehead, and afterwards the rest of the head (fourth day), [1].  
Headache above the eyes, at 10 o'clock in the morning (fifth day), [1].  
(40) Headache as if the forehead would split (third day), [1].

### ***Temples.***

Painful pressure in the temples (second day), [1].  
Very acute lancinations in the right temple (second day), [1].

### ***Vertex.***

Sensation as if a red-hot iron were stuck into the vertex (fourth day), [1].  
Great headache at the vertex, with sensitiveness of the scalp to the touch (fourth day), [1].

### ***Occiput.***

Bruised pain at the occiput (seventh day), [1].

### ***External Head.***

Small pimples on the scalp (third day), [1].

## **EYE.**

Haggard eyes (fifth day), [1].  
Yellow rings around the eyes (second day), [1].

### ***Brow and Orbit.***

Constant trembling of the eyebrows, especially the left (second day), [1].  
(50) Pain under the right orbit, and at the right side of the forehead (second day), [1].  
Heavy pain in the bottom of the orbit, and at the left eyebrow (first day), [1].  
Weight on the orbits, at night (fifth day), [1].

### ***Lids.***

Heaviness of the eyelids (fourth day), [1].  
Sensation of a grain of sand in the outer canthi of the eyes, [1].  
Slight pain under the lids (tenth day), [1].  
Itching in the canthus (third day), [1].

### ***Lachrymal Apparatus.***

Profuse flow of tears (fifth day), [1].

### ***Ball.***

Pressive contraction of the right eyeball, which felt as if drawn out (seventh day), [1].  
The left eye feels as if drawn towards the temple, [1].  
(60) Sensation as if a thread was being wound up in the eye, and pulled the eyeball toward the



temple (second day), [1].

Cutting sensation all around the eyeball, as if it was being taken out with a penknife (second day), [1].

***Vision.***

The sight is affected (after forty minutes), [2].

Appearance of a dazzling blue light before the eyes (second day), [1].

**EAR.**

Swelling of the right ear (second day), [1].

Stitches in the meatus auditorius (fifth day), [1].

Titillating itching in the ears (second day), [1].

***Hearing.***

Deafness (second day), [1].

Very deaf (after a month), [1].

Buzzing in the ears while going downstairs (eighth day), [1].

**NOSE.**

***Objective.***

(70) Ulcer in the nose (fifth day), [1].

Abundant discharge of mucus from the right nostril, at night (third day), [1].

Bloody serum runs from the nose (after seven hours), [2].

Nosebleed (after three hours), [2].

Epistaxis of bright blood (tenth day), [1].

***Subjective.***

The tip of the nose is drawn up as by a string, which follows its median line and is fastened in the centre of the forehead, [1].

Smarting in the nostrils (second day), [1].

Smell.

Smell all day like that of the *Crotalus* itself, insipid, nauseous, like that of a hospital (fifth day), [1].

**FACE.**

Red face (after three hours and three-quarters), [2].

Yellow complexion (tenth day), [1].

(80) Pain in the left cheek (second day), [1].

Difficulty in moving the lips (after one hour and a half), [2].

Black, bloody froth about the lips, in the morning (second day), [1].

**MOUTH.**

***Teeth.***

The molar teeth feel on edge, and are excessively sensitive (eighth day), [1].

Toothache, at night, in the upper molars, with inflammation of the gums (tenth day), [1].

***Gums.***

Pain in the lower gums, as if touched by a red-hot iron (fourth day), [1].

Pressive pain in the left gums, [1].

***Tongue.***

Tongue scarlet-red (second day), [1].

Paralysis of the tongue; he cannot speak (fifth day), [1].

Pain in the tongue and larynx, extending to the abdomen (after one hour and five-sixths), [2].

(90) Burning and prickling at the tip of the tongue (third day), [1].

Itching of the tongue (third day), [1].

***Saliva.***

Flow of saliva (after four hours and three-quarters), [2].

White, viscid saliva (after seven hours), [2].

Thick, viscid, dark-colored saliva, difficult to detach (after five hours and three-quarters), [2].

Discharge of white mucus from the mouth (tenth day), [1].

***Taste.***

Very salt taste in the mouth; not removed by drinking sugar-water, [1].

Putrid taste or taste of onions, in the mouth, until it is rinsed (third day), [1].

***Speech.***

Difficult speech (after two hours and a quarter), [2].

**THROAT.**

Feeling as of dust in the throat (third day), [1].

(100) Feeling of a lump in the throat (after seven hours), [2].

Burning and constriction in the throat, [1].

Constriction of the throat (after four hours and a quarter), [2].

Constricted feeling in the throat (after one hour and a half), [2].

Formication in the throat, as if beer was effervescing there, [1].

**Swallowing.**

Difficult deglutition (after two hours and a half and seven hours), [2].

***External Throat.***

Feeling of fulness in the jugular veins, extending to the sides and back of the neck (after forty minutes), [2].

First the blood is felt rising in the carotid arteries several times; then there is a faint feeling, and lastly a sensation as if a valve were suddenly opened (fourth day), [1].

Pain in the jugular veins, when moving the neck (third day), [1].

Constriction in the thyroid gland, [1].

Constrictive pain, as if a string was tied around the thyroid gland (fourth day), [1].

**STOMACH.*****Appetite.***

(110) Great appetite, passing off suddenly at the sight of food (second day), [1].

Anorexia all day, and great appetite in the evening (third day), [1].

Repugnance for food (tenth day), [1].

Loathing of meat (second day), [1].

***Thirst.***

Great thirst (second day), [1].

Great desire for snow, without wanting either water or wine (sixth day), [1].

### ***Nausea and Vomiting.***

Desire to vomit (second day), [1].

Vomiting after breakfast, caused by drinking tepid water (eighth day), [1].

### ***Stomach.***

Disordered state of the stomach (fourth day), [1].

Feeling of coldness in the stomach, after eating, [1].

(120) Sensation as of an opening in the pit of the stomach, through which air passes (third day), [1].

Each mouthful of food falls suddenly into the stomach, like a stone, with pain felt even in the back (third day), [1].

Burning pinching at the pylorus, [1].

Stomachache, extending to the navel (second day), [1].

Stomachache, when eating, as from emptiness (fifth day), [1].

Twitching at the pit of the stomach (second day), [1].

Excessive sensitiveness of the epigastrium, which cannot endure any clothing (eighth day), [1].

Violent blow on the epigastrium (fourth day), [1].

## **ABDOMEN.**

### ***Hypochondria.***

Feeling as if a peg were sticking in the middle of the liver, [1].

Excessive weight at the diaphragm (fourth day), [1].

Umbilical.

Pain across the umbilical region, with alternate sensations of spreading out and pinching together (seventh day), [1].

### ***General Abdomen.***

(130) Borborygmi (second day), [1].

Bellyache, after drinking (second day), [1].

Sensation as of bands around the abdomen (third day), [1].

Pain as from a band around the abdomen, fastened at the navel, [1].

Pressure in the whole abdomen, in the direction of the navel (second day), [1].

Pressive stitches in the abdomen (fifth day), [1].

The abdomen is exceedingly sensitive (second day), [1].

### ***Hypogastrium.***

Pains in the hypogastrium on taking a cold drink (eighth day), [1].

Enormous weight at the hypogastric region (fourth day), [1].

## **RECTUM AND ANUS.**

Prolapsus recti for ten minutes (second day), [1].

(140) Urging and tenesmus, followed by discharge from the anus of mucus like white of eggs (second day), [1].

## **STOOL.**

Yellowish diarrhoea (eighth day), [1].

Obstinate constipation (eighth day), [1].

## **URINARY ORGANS.**

Copious urination (after five hours and three-quarters and seven hours), [2].

Involuntary emissions of urine during sleep (seventh day), [1].

## **SEXUAL ORGANS.**

Violent lacerations in the uterus, when washing herself with cold water; terrible lacerations if the water is warm, with weight on the uterus (fourth day), [1].

Lacerations, like knife stabs, in the uterus and anus, especially when washing with cold water (eighth day), [1].

Intermittent metrorrhagia of bright-red blood twice a day, in alternation with the paroxysms of mania (seventh day), [1].

Vermilion-colored metrorrhagia, which suddenly ceased in the course of the day (fifth day), [1].

Leucorrhœa (third day), [1].

## **RESPIRATORY ORGANS.**

### ***Voice.***

(150) The voice is extinct (fourth day), [1].

### ***Cough and Expectoration.***

Dry cough, at night, from tickling in the throat (third day), [1].

Green expectoration, in the morning (second day), [1].

Spitting of black blood, [1].

Spitting of blood mixed with thick phlegm (tenth day), [1].

### ***Respiration.***

Quiet breathing (after five hours and three-quarters), [2].

Impeded respiration (after four hours and a quarter), [2].

Oppression of breathing, as though there were not air enough in the house (sixth day), [1].

Suffocative feeling (eighth day), [1].

Suffocative feeling, with dread of another attack (fourth day), [1].

(160) Feeling of suffocation (seventh day), [1].

The sense of suffocation increases (fifth day), [1].

## **CHEST.**

Sensation of water in the chest, with efforts to throw it up, and faint feeling, as if the heart were dipped in a liquid (third day), [1].

Pain in the chest, extending to the back (third day), [1].

The chest and head feel as if compressed by an armor of iron (third day), [1].

Drawing from the neck to the epigastrium (fifth day), [1].

Feeling of internal sores under the breasts (second day), [1].

Pain in the right clavicle (fifth day), [1].

Bone-pain and swelling of the left clavicle (sixth day), [1].

The humeral extremity of the left clavicle continues to swell (seventh day), [1].

### ***Sides.***

(170) Pain in the left side (tenth day), [1].

Stitches in the side (third day), [1].

Stitch in the left side, when drawing breath, after drinking (third day), [1].

## **HEART AND PULSE.**

### ***Præcordium.***

Feeling as if the heart were beating from above downwards (fifth day), [1].

### ***Heart's Action.***

Palpitation of the heart (fifth day), [1].

She cannot perceive any one at her right side without palpitation of the heart, and a real fatigue from pleasure (seventh day), [1].

***Pulse.***

Frequent pulse (after one hour and a half), [2].

Pulse 96 (after three hours), [2].

Pulse 98 (after three hours and three quarters), [2].

Pulse 100 (after three hours and a quarter), [2].

(180) Pulse 104 (after four hours and three-quarters), [2].

Pulse full, 110 to 140, [2].

Pulse rather heavy, [1].

**NECK AND BACK.**

***Neck.***

Painful twitching in the sides of the neck when turning the head, [1].

***Back. Dorsal.***

Internal pain between the shoulders (fifth day), [1].

Stitches as from pins in the dorsal spine (second day), [1].

Bruised feeling at the inside of the right scapula (second day), [1].

Bruised pain between the shoulders, and sometimes slow and measured lancinations when inclining backwards, as if a vertebra was fractured (fourth day), [1].

***Lumbar.***

Painful heaviness in the loins (second day), [1].

Pain, like lancinations, in the psoas magnus muscle (eighth day), [1].

(190) Great pain at the sacro-lumbar articulation (sixth day), [1].

**EXTREMITIES IN GENERAL.**

All the limbs tremble (fourth day), [1].

Weariness of the arms and legs (second day), [1].

**SUPERIOR EXTREMITIES.**

Increased pain in the upper extremities, which gives the patient no rest, despite his extreme prostration (after four hours and a quarter), [2].

Weariness of the arms (second day), [1].

Numbness of the arms (after three hours), [2].

Intense pains in the arms (after three hours and a half), [2].

***Shoulder.***

Rheumatic pain in the right shoulder (tenth day), [1].

Lancinations under the right axilla, like two successive stabs with a dagger, arresting the breathing, and felt in the chest, [1].

***Elbow.***

Pain in the elbows (third day), [1].

(200) Pain in the elbow, as if the bones were pulled (second day), [1].

***Forearm.***

The pain and swelling extend over two-thirds of the forearm (after one hours and a half), [2].

Cramps in the arms, as if the nerves had been tied in a knot in the bends of the elbows (tenth day), [1].

***Wrist.***

Rheumatic pain in the left wrist (eleventh day), [1].

***Hand.***

Swelling of the hand, with drops of blood from the wound, [2].

Prodigious swelling of the hand, which feels cold, as also do the legs and feet (after one hour), [2].

The whole hand is swollen and painful (after one hour and a half), [2].

The hands tremble (fifth day), [1].

Pain in the hollow of the hand (second day), [1].

Pain in the palm of the hand, extending to the wrist (after ten minutes), [2].

***Fingers.***

(210) The tips of the fingers are blue (tenth day), [1].

The nails are red (third day), [1].

The roots of the nails are laid bare (tenth day), [1].

Jerking in the fingers (second day), [1].

The last phalanges feel as if broken (tenth day), [1].

Smarting at the fingers tips (third day), [1].

**INFERIOR EXTREMITIES.**

Drawing up of the lower limb from the hip to the foot, with crampy pain (third day), [1].

Sensation as if the right leg, from the hip to the heel, were shortened; this sensation, though illusory, causes him to limp, [1].

***Hip.***

Pressure on the left hip, as with the blade of a knife (seventh day), [1].

***Thigh.***

Acute pulling in the thigh, with momentary paralysis of the right lower extremity (second day), [1].

***Knee.***

(220) While drinking cold water, the veins of the knee have a deep-black color (eighth day), [1].

Pricking, as from needles, behind the knees (fourth day), [1].

***Foot.***

Violent cramps in the heel (twelfth day), [1].

***Toes.***

Swelling of the three last toes of the left foot (seventh day), [1].

Contraction of the toes (sixth day), [1].

The toes remain bent (third day), [1].

**GENERAL SYMPTOMS.**

***Objective.***

Visible trembling of the whole body (after one hour and a half), [2].

Great debility (fourth day), [1].

Muscular prostration (after five hours and three-quarters), [2].  
Faintness, relieved in the open air (third day), [1].  
(230) Fainting from hunger, before eating (seventh day), [1].  
Increasing restlessness and anxiety (after three hours), [2].  
Desire to move about (tenth day), [1].

***Subjective.***

Torpor (after five hours and three-quarters), [2].  
Numbness all over, [2].  
Even while awake, he feels as if falling out of bed (sixth day), [1].  
She feels uncomfortable in consequence of having her courses, and is out of humor on account of having them (tenth day), [1].  
Pain in the bones, especially of the joints; at the shoulder-blades, elbows, phalanges of the fingers, at the knees, the hip, and under the toe-nails (seventh day), [1].  
Great pain all over (after four hours and three-quarters), [2].  
Lancinations in various parts of the body (sixth day), [1].

**SKIN.**

(240) General redness increases (after four hours and a quarter), [2].  
Circular spot between the breasts, which is black at the upper and red at the lower portion (eighth day), [1].  
Bright-yellow freckles, or spots of sunburn, on the upper part of the right hand (eighth day), [1].  
Excoriation and pustules on the left toes (seventh day), [1].

***Eruptions, Dry.***

Small red pimples all over (tenth day), [1].  
Small red pimples with a white tip (eighth day), [1].  
The pimples begin with a red spot on the skin, like a fleabite; they then appear as conical elevations, which become the centres of an exfoliation, less extensive than that caused by the *Elaps corallinus*, with a small black speck remaining in the middle (third day), [1].  
Eruption of small red conical pimples on the wrist (second day), [1].  
Small red pimples on the left foot, like those which appeared on the hand, on the second day of the proving (eighth day), [1].

***Eruptions, Pustular.***

Blood is discharged from a pustule under the arm (after three hours and three-quarters), [2].

***Subjective.***

(250) Prickling all over the body, [1].  
Acute sensation of burning and redness of the skin, which is perceptibly depressed at the opening of the right nostril (third day), [1].  
Formication in the face (after forty minutes), [2].  
Formication in the feet, as far as the ankles (fourth day), [1].  
Itching at the epigastrium (sixth day), [1].  
Itching of the thighs (second day), [1].  
Violent itching of the calves (eighth day), [1].  
Itching under the feet (fourth day), [1].

**SLEEP AND DREAMS.**

***Sleepiness.***

Constant yawning (third day), [1].

Sleepiness in the morning, [1].  
(260) Somnolence, with moaning (after seven hours), [2].  
Drowsiness (after one hour and a half), [2].  
Drowsiness, the whole morning (seventh day), [1].  
Sleep (after nine hours and a half), [2].

***Sleeplessness.***

Sleeplessness, [1].  
Sleeplessness, with restlessness (third day), [1].  
Piteous moaning in sleep (sixth day), [1].  
Startings in sleep, [1].

***Dreams.***

Dreams about evening parties, with illuminations, quarrels, battles (second day), [1].  
Dreams about enormous hairy spiders, which approach and try to climb up one's person (eighth day), [1].  
(270) Dream about a horse which bathes in a pool, and is gradually drowned (sixth day), [1].  
Dreams about corpses and ghosts (tenth day), [1].

**FEVER.**

***Chilliness.***

General coldness, not relieved by covering (fourth day), [1].  
Patient is cold, and covers himself up (after one hour and three-quarters), [2].  
Coldness in the back (sixth day), [1].  
Coldness in the back, after eating (fifth day), [1].  
Coldness of the hands (fifth day), [1].  
The feet are cold (second day), [1].  
The feet are icy cold (fifth day), [1].  
The feet feel cold (after one hour and five-sixths), [2].

***Heat.***

(280) Flushes of heat in the face (eighth day), [1].  
Flushes of heat in the face (eighth day), [1].  
Burning forehead (fifth day), [1].  
Burning in the thighs (sixth day), [1].

***Sweat.***

Sweat and weakness, after eating (second day), [1].  
General sweat (after three hours and a quarter), [2].  
Copious sweat on the chest (after two hours and a half), [2].  
Skin moist (after five hours and three quarters), [2].

**CONDITIONS.**

***Aggravation.***

(*Morning*), Froth about lips; green expectoration; drowsiness.  
(*Forenoon*), At 10 o'clock, headache above eyes; weight on orbits.  
(*Evening*), Great appetite.  
(*Night*), Fright; frontal headache; discharge from nostrils; toothache; dry cough.  
(*When alone*), Thoughts of death.  
(*After cold drinks*), Pain in hip.  
(*Washing with cold water*), Lancinations in uterus.



(*While descending stairs*), Buzzing in ears.  
(*After drinking*), Bellyache.  
(*When eating*), Stomachache.  
(*After eating*), Cold feeling in stomach; coldness in back.

**Amelioration.**

(*Open air*), Faintness.  
(Timothy F. Allen, *The Encyclopedia of Pure Materia Medica*, vol. 3 (1876), p. 600-606)

## Supplement

Authority. [3], S. B. Higgins, *Ophidians*, Philadelphia, 1873, p. 112, the wound was inflicted in a man's finger. [From Mure, *Pathogénésie brésilienne*, 1849, p. 321-322]

**Mind.**

Anxiety (after two hours and twenty-five minutes), [3].  
Inquietude and anxiety increased (after two hours and fifty minutes), [3].  
Feels exceedingly downcast (after three hours and four minutes), [3].  
Inquietude (after three hours and fifteen minutes), [3].  
Involuntary groans and moaning (after three hours and four minutes), [3].  
Groans (after seven hours), [3].  
Has a feeling of stupidity (after five hours and thirty minutes), [3].

**Head.**

Unpleasant sensation in the head (after one hour and thirty minutes), [3].

**Eye.**

Feels a blur before his eyes (after one hour), [3].

**Nose.**

Slight epistaxis (after two hours and fifty minutes), [3].  
Flow of blood from the nose (after three hours and thirty minutes), [3].  
Flow of sanguinolent serosity from the nostrils (after seven hours), [3].

**Face.**

Face much flushed (after three hours and thirty minutes), [3].  
A crawling sensation in the face (after one hour), [3].  
Feels it difficult to move the lips (after one hour and thirty minutes), [3].

**Mouth.**

Salivation (after four hours and thirty minutes), [3].  
Saliva thick, dark-colored, viscous; spits with difficulty (after five hours and thirty minutes), [3].  
Saliva whitish, viscous (after seven hours), [3].  
Finds it difficult to speak (after two hours and five minutes), [3].

**Throat.**

Sensation of constriction in the throat (after one hour and thirty minutes), [3].  
Constriction in the throat; respiration difficult (after four hours), [3].  
Sensation as of a knot in the throat (after seven hours), [3].  
Feels a pain in the œsophagus, which extends to the stomach and abdomen (after one hour and

forty-eight minutes), [3].

Swallows with difficulty (after two hours and twenty-five minutes), [3].

Deglutition difficult (after seven hours), [3].

### **Urinary Organs.**

Abundant discharges of urine (after five hours and thirty minutes, and seven hours), [3].

### **Chest.**

Unbearable pains in the thorax (after four hours), [3].

### **Pulse.**

Pulse strong; increases at intervals from 110 to 140 per minute (after one hour); pulse accelerated (after one hour and thirty minutes); pulse 96 (after two hours and fifty minutes); pulse 100 (after three hours and four minutes); pulse 98 (after three hours and thirty minutes); pulse 104 (after four hours and thirty minutes); pulse 104 (after five hours and thirty minutes), [3].

### **Neck.**

Sensation of plenitude in the jugular veins, which is soon felt in the sides of the throat and nape of the neck (after one hour), [3].

### **Superior Extremities.**

Swelling of the hand, and drops of blood escape from the wound, [3].

Pain in the palm of the hand, which extends up to the wrist, [3].

The hand is exceedingly swollen, accompanied by a sensation of cold, which is also felt in the lower extremities (after one hour), [3].

Pain and œdema extend from the hand nearly up to the elbow (after one hour and twenty minutes), [3].

The entire arm is swollen and very painful (after one hour and a half), [3].

Swelling of the arms (after two hours and fifty minutes), [3].

Pains in the arms (after three hours and fifteen minutes), [3].

The pains cause frequent groans (after five hours and thirty minutes), [3].

### **Generalities.**

Visible tremors in whole body (after one hour and thirty minutes), [3].

Patient excessively prostrated (after four hours), [3].

Muscular prostration (after five hours and thirty minutes), [3].

The whole body seems to fill itself up (after one hour and twenty minutes), [3].

Great pain in the surface of the whole body (after four hours and thirty minutes), [3].

### **Skin.**

The whole body is flushed and red (after three hours and thirty minutes), [3].

Body a much darker red (after four hours), [3].

The blood starts from a pustule in the arm-pit (after three hours and thirty minutes), [3].

### **Sleep.**

Inclination to sleep (after one hour and thirty minutes), [3].

Profound sleep (after nine hours and fifteen minutes), [3].

Somnolency (after seven hours), [3].

### **Fever.**

He feels cold, and desires to cover himself (after one hour and thirty-eight minutes), [3].

Sensation of cold in the feet (after one hour and forty-eight minutes), [3].

General perspiration (after three hours and four minutes), [3].

The skin is moist (after five hours and thirty minutes), [3].

Copious perspiration in the chest (after two hours and twenty-five minutes)."

(Timothy F. Allen, *The Encyclopedia of Pure Materia Medica*, vol. 10 (1879), p. 495-497)

## Heilungen / Cures



Benoît Jules Mure (1809-1858)

## Heilungen / Cures

### Übersicht / Overview

1854 - Néphralgie oculaire chez une femme âgée de vingt-cinq ans - M. Decran

1854 - Amblyopie chez une femme âgée de trente-trois ans - M. Decran

### **1854 - Néphralgie oculaire chez une femme âgée de vingt-cinq ans - M. Decran**

"Marie Repos, vingt-cinq ans, très-grasse, bonne mine, demeurant à Bourbon-Lancy.

Menstruation régulière, mais peu abondante depuis six ans. Ophthalmie depuis deux mois, sans rougeur que lorsqu'il y a céphalalgie, conjonctive alors injectée. Elle éprouve aux yeux une sensation d'arrachement, de creusement, de découpage circulaire, avec lancinations.

La souffrance est plus grande le matin et le soir. Gonflement des paupières le matin.

Cette ophthalmie a été précédée de vertiges, qui ont été combattus par une saignée.

Il y a céphalalgie frontale et occipitale, fréquente; photophobie, ne peut supporter la lumière de la chandelle. Palpitations de cœur, surtout aux époques menstruelles.

Le traitement suivi: saignée, qui avait dissipé les vertiges; puis collyres, vésiculatoires, sans amélioration aucune.

La malade prend 4/5 *crotal*, un globule matin et soir, deux jours de suite, qui firent disparaître en peu de jours et complètement la névralgie oculaire, la photophobie, les palpitations, et, au bout de trois semaines, la céphalalgie était diminuée de plus de 7/8.

Les palpitations de cœur, aux approches de l'époque, manquèrent aussi; les règles furent avancées de huit jours et un peu augmentées; elles n'avançaient jamais.

La même ophthalmie reparut six mois après, et trois globules du même médicament en triomphèrent de nouveau.

C'était en avril 1853."

(M. Decran, Faits homoeopathiques, Journal de la Société Gallicane tome 8 (1854), p. 597-598)

### **1854 - Amblyopie chez une femme âgée de trente-trois ans - M. Decran**

"La femme Gobelet, de Bourbon-Lancy, âgée de trente-trois ans, était affectée depuis trois ans d'une amblyopie avec éblouissements, sans vertiges.

Elle éprouvait la sensation d'une douleur sécante autour de l'œil; elle voit comme des mouches qui s'agitent, montent et descendent; de plus, la nuit comme le jour, des chandelles de différentes couleurs, avec élancements aux yeux.

Cause: chagrins, travail sur le blé [??].

Le 1<sup>er</sup> octobre 1855 je lui donnai 4/5 *crotal*, un matin et soir.

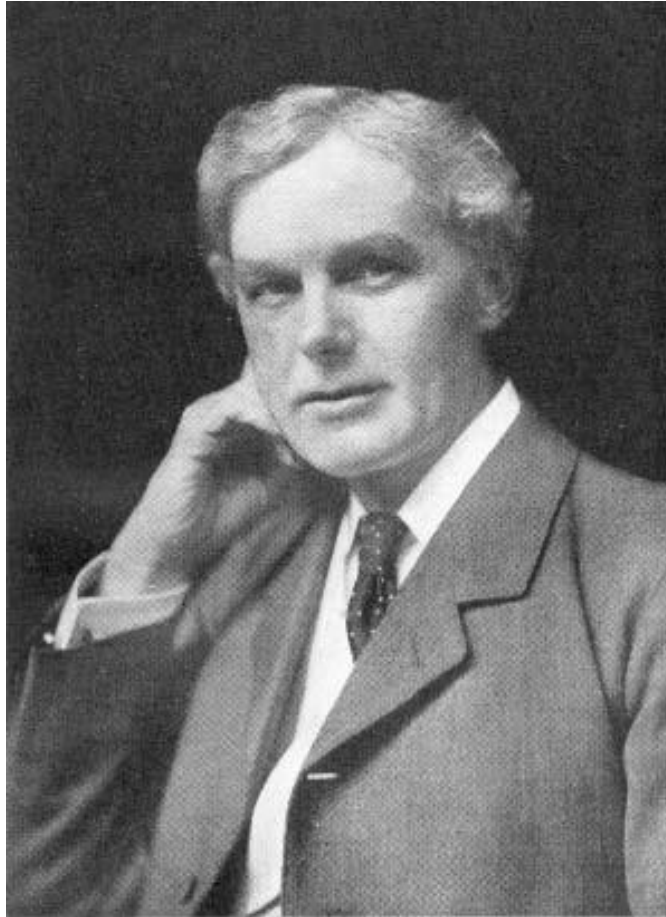
Dès la première huitaine, amélioration de moitié.

Quinze jours après les premiers globules, 5/10 *crotal* dans les vingt-quatre heures.

Guérison complète environ dans la quinzaine."

(M. Decran, Faits homoeopathiques, Journal de la Société Gallicane tome 8 (1854), p. 597-598)

## **Leitsymptome und Charakteristika - Keynotes and Characteristics**



John Henry Clarke (1853-1931)

# Leitsymptome und Charakteristika - Keynotes and Characteristics

1900 - John H. Clarke

**Description.** - A Brazilian Rattle-snake. N. O. Crotalidae. (Proving by Mure, together with effects reported by Higgins.) Trituration of the virus with Saccharum lactis.

**Clinical.** - Goitre. Headache. Mania. Metrorrhagia. Nose-bleed. Uterus, neuralgia of.

**Characteristics.** - The poison of Cascavella is as deadly as that of the other Crotalidae, and the general symptoms are like those of the other members of the group, but the mental symptoms are more pronounced and peculiar. Lancinating pains are frequent, and are < by cold washings. Many symptoms are < at night. Pains in bones. Hallucinations are marked and peculiar; a magnetic state is induced. There is headache after sleep as with Lach. *Compare:* Crotal. hor., lach., &c.

## SYMPTOMS

**Mind.** - Magnetic state; she hears nothing, and again sees the spectre of death, as a gigantic black skeleton. Hears a strange voice to left and behind her, and follows it, throws herself against closed doors, and scratches them with her nails. Attempts to throw herself out of window. Fancies her eyes are falling out. He fancies he hears groans. Thoughts dwell on death. Fright at night about indefinite things. Clairvoyant. Anxiety and inquietude. Involuntary groaning.

**Head.** - Entire skull compresses the brain like an iron helmet. Sensation as if something alive were walking inside the head in a circle. Headache, epistaxis and great excitement, caused by starting out of sleep. Shocks in head which almost throw her off her balance. Acute lancinations in right temple. Sensation as if a red-hot iron were stuck into vertex.

**Eye.** - Feels a blur before her eyes. Dazzling blue light. Pressive sensation of right eyeball, which felt as if drawn out. Left eye feels as if drawn towards temple. Cutting sensation all round eyeball as if it was being taken out with a pen-knife.

**Ear.** - Swelling of right ear. Very deaf. Buzzing in ears while going downstairs.

**Nose.** - Bloody serum runs from nose. Epistaxis of bright blood. Tip of nose feels drawn up as by a string and fastened to centre of forehead. Smell, like that of the snake; as of a hospital.

**Face.** - Face red; or yellow. Crawling sensation in face. Difficult to move lips.

**Mouth.** - Tongue scarlet red; paralysed. Pain in tongue and larynx extending to abdomen. Burning and prickling at tip. Itching of tongue. Thick, viscid, dark saliva. Discharge of white mucus from mouth. Taste, very salt; of onions; putrid. Speech difficult.

**Throat.** - Feeling of dust in throat; of lump. Burning; constriction; formication. Constrictive pain as if a string were tied round thyroid body. Pain in oesophagus extending to abdomen. Swallowing difficult.

**Stomach.** - Great desire for snow, without wanting either water or wine. Feeling of coldness in stomach after eating. Sensation of an opening in stomach through which air passes. Each mouthful of food falls suddenly into stomach, like a stone, with pain felt even in the back. Epigastrium sensitive, cannot bear clothing. Violent blow in epigastrium.

**Abdomen.** - Feeling as if a peg were sticking in middle of liver. Weight at diaphragm; and in

hypogastrium. Sensation of a band round abdomen.

**Stool and Anus.** - Prolapsus ani; urging and tenesmus, followed by discharge from anus of mucus like white of egg. Yellowish diarrhoea. Obstinate constipation.

**Urinary Organs.** - Copious urination. Involuntary emissions during sleep.

**Female Sexual Organs.** - Violent lancinations in uterus when washing with cold water; terrible lancinations if the water is warm, with weight in uterus. Lancinations like knife-stabs in uterus and anus, esp. when washing with cold water. Intermitting metrorrhagia (vermilion-coloured).

**Respiratory Organs.** - Dry cough at night from tickling in throat. Green expectoration in morning. Suffocative feeling with dread of another attack.

**Chest.** - Intolerable pains in thorax. Sensation as if head and chest were compressed by iron armour. Sensation of water in chest, with efforts to throw it up, and faint feeling as if heart were dipped in a liquid. Bone-pain and swelling of left clavicle. Stitches in left side on drawing breath.

**Heart.** - Feeling as if heart were beating from above downwards. Palpitation if any one stands at her right side. Faintness > in open air.

**Neck and Back.** - Full feeling in carotids. Pain in sacro-lumbar articulation.

**Limbs.** - All limbs tremble and are weary.

**Upper Limbs.** - Knife-stabs under right axilla, arresting breathing. Cramp in arms. Pain in palm of hands extending to wrist. Numbness and swelling of arms.

**Lower Limbs.** - Sensation as if right hip, from hip to heel, were shortened; this sensation, though illusory, causes him to limp.

**Skin.** - Skin red. Eruption of small red pimples. Prickling formication, itching.

**Sleep.** - Somnolence. Dreams of corpses and ghosts.

**Fever.** - General coldness, not relieved by energy. Feet icy cold.

(John Henry Clarke, M.D., A Dictionary of Practical Materia Medica, vol. 1 (1900), Crotalus Cascavella, p. 611-612)



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## Anhang / Appendix

"The WHO estimates the occurrence of 2,500,000 snakebites per year, resulting in 125,000 deaths worldwide and approximately 100,000 survivors with severe consequences."

(J. P. Chippaux, 1998)

### **1998 - Snake-bites: appraisal of the global situation - J.-P. Chippaux**

"The true global incidence of envenomations and their severity remain largely misunderstood, except for a few countries where these accidents are rare or are correctly reported. Nevertheless, this information is essential for drawing up guidelines for dealing with snake-bites, to plan drug supplies, particularly antivenin, and to train medical staff on snake-bite treatments. Since the comprehensive review by Swaroop & Grab in 1954 no global survey has been carried out on snake-bite epidemiology. The present article is an attempt to draw the attention of health authorities to snake envenomations and urges them to prepare therapeutic protocols adapted to their needs.

#### **Introduction**

Snake-bites are not systematically reported in most countries. Moreover, very few countries possess a reliable epidemiological reporting system capable of providing precise data on snake-bites. Instead, scientific reports and publications have to be used to assess the magnitude of the problem posed by snakebites. The data thus obtained are generally more precise and reliable but often cover limited geographical areas or deal with special aspects. From these data, and taking into account the activities practised by a given population and the proportion living in rural zones, estimates have been made of the number of snake-bites, their severity, and mortality due to envenomations. These evaluations are summarized in this article, by region. The values are speculative, but minimal, and highlight the necessity of performing more precise investigations.

As discussed below, two methods can be used to estimate the incidence (total number of snakebites), morbidity (number of envenomations), case fatality rate (number of deaths among envenomed people), and mortality from snake-bites (number of deaths due to envenomation among the general population).

\* *The household survey.* This is carried out by visiting every family in a village (or a randomized sample of a population) and questioning them about their snake-bite histories. The results obtained provide information on the incidence of snake-bites in a community and data on treatment sought or the circumstances of bites.

\* *Hospital records or health authority statistics.* These can provide data on snake-bite morbidity, case fatality rate, and mortality. However, in some locations, hospitals are few and far between and hospitalized cases may represent a low proportion of total snake-bites. Also, data from some locations may be inaccurate.

A distinction is made between hazardous snakebites, which occur when humans encounter a snake, and "illegitimate" snake-bites inflicted by an animal kept in captivity or during snake handling. In industrialized countries the frequency of illegitimate snake-bites is increasing (14, 66, 76, 81), while hazardous snake-bites occur mainly in developing countries especially among rural active people, chiefly while they are working in the fields. For example, illegitimate bites represented 21% of the total snakebites in Utah, USA, during the early 1990s (70).

The incidence of bites is high in warm regions, where snakes are abundant and economic activities are mainly agricultural. In most developing countries, up to 80% of people bitten by snakes (13, 98) consult first traditional practitioners and only subsequently resort to modern medicine, thus accounting for the long delays before they receive proper treatment.

Notified cases, data on which are used to determine morbidity, therefore cover only a small proportion of the true numbers. In some areas the high morbidity from snake-bites should denote a high prevalence of venomous species, notably in populous regions. High mortality and/or case fatality rates mean that treatment of envenomations is not adequate. There are many reasons for the high mortality rate, e.g. scarcity of health facilities, unavailability of drugs and antivenins, poor training of health workers on snake-bite management, and long delays before starting treatment. Each location has to be examined individually to determine the particular reasons which prevail there.

## **Snake-bite incidence and severity**

### **Europe and the Middle East**

In Europe, snake-bites are relatively rare (Table 1). The snakes involved belong to the *Vipera* genus, represented in Europe by a few species that are not among the most venomous:

*V. aspis* (asp viper), *V. ammodytes* (sand viper), *V. berus* (common viper), and *V. latastei* (Lataste's viper). In Great Britain, there are approximately 200 hospitalizations a year from snake-bites but no deaths have been reported since 1975 (75, 111). In France, the number of cases is higher. Chippaux et al. reported an annual incidence of approximately 5 cases per 100000 residents in the Department of Yonne (150 km south of Paris) (17) and similar incidences have been reported elsewhere in the country (7). The annual incidence for the whole of France is about 2.5 per 100000 inhabitants; however, the annual morbidity is rather less than 0.5 per 100000 people and the case fatality rate is about 0.3% (42). In Switzerland, the morbidity is very low, corresponding to approximately 0.1 case per 100000 residents per year (100). In rural areas of southern Europe rates are higher. In Spain (33) and Italy (71) the annual incidence of snake-bites can reach 5 per 100000 people. In Italy, the morbidity is about 1 per 100000 per year with a case fatality rate of 0.1-0.6%, and the annual mortality from snake-bites ranges from 0.01 to 0.04 per 100000 people (4).

In Europe (population, ca. 730 million), the annual number of snake-bites could reach 25000, of which 8000 involve an envenomation. About 90% of envenomed patients are hospitalized and about 30 deaths could result every year.

In the Middle East, the snake species involved in bites are more dangerous than in Europe:

*V. lebetina* (Levantine viper), *V. xanthina*, *V. palestinae* (Palestine viper) or their cognates (1, 28, 35, 63). Although data are lacking, the incidence of snakebites appears to be low, and as in North Africa, scorpion stings are more frequent events. *Cerastes* spp., a rather common *Viperidae* in North Africa and in Middle East, are not very dangerous, although the venom can provoke local necrosis. In the Middle East (population, ca. 160 million), the annual number of snake-bites could be as high as 20000, with about 15 000 envenomations per year; probably not much than 60% of those bitten attend hospital and the mortality can be estimated at 100 deaths every year.

### **Americas**

In Canada and the USA (population, ca. 270 million), the annual incidence of snake-bites, particularly in the USA, is similar to that observed in Europe. According to Parrish (65) and Russell (81), approximately 45000 snake-bites occur each year in North America. Of these bites about 10000 are inflicted by venomous species, 6500 require medical intervention, and

approximately 15 individuals thus bitten die each year. The case fatality rate is very low in view of the high toxicity of the venom of some of the species of snakes (e.g. *Crotalus* spp.). The implementation of adequate treatment is probably the reason for this low case fatality rate. The deaths that do occur are mainly due to delayed or insufficient treatment or to people refusing therapy.

In Central and South America, the prevalence of snake-bites is significantly higher (Table 2), with Crotalidae being responsible for most envenomations, provoking oedema, necrosis, and haemorrhages. In savanna areas of South America, the bite of *Crotalus durissus terrificus* (tropical rattlesnake) provokes neurotoxic envenomations associated with mild inflammation, severe rhabdomyolysis, and renal failure, while in Central America, the bite of *C. durissus durissus* induces severe local oedema and necrosis but no neurotoxicity or rhabdomyolysis.

Recent studies showed that the use of antivenin has contributed to a significant improvement in envenomation prognosis. Nevertheless, in Ecuador, for example, the case fatality rate ranges from 5.4% for envenomations treated in hospital (46) to 6.3% in some bush areas (109); the annual snake-bite morbidity has been evaluated to be 30 per 100000, with the associated mortality being 1.8 per 100000 per year (109). In Costa Rica, the current average annual morbidity and mortality reported by health services is about 20 per 100000 and 0.4 per 100000, respectively (34, 79); however, in the 1970s, mortality was around 0.5 per 100000 (6). Some surveys in forest areas have found a high incidence of snake-bites, especially among Indians (19, 21, 51). In Brazil, the notified annual morbidity from snake-bites is about 15 per 100000 people mainly from *Bothrops* spp. The reported incidence of envenomation for the whole of Brazil is about 20000 cases per year, e.g. 15 per 100000 population (41). Mortality from snakebites in Sao Paulo State, where available data are probably more relevant, reaches 0.04 per 100000 (52). However, Cruz-Rocha et al. (25) demonstrated that the real incidence in Amazonas State was at least six times greater than the notified value. The case fatality rate is less than 1% in the south of the country (10) and 1.3% in the Amazon area (25); the annual mortality rate in the Amazon basin is about 1.1 per 100000 people.

On the basis of values reported in the literature (6, 29, 34, 83), the annual incidence of snake-bites in Central and South America (population, ca. 400 million) should be at least 300000; a total of 150000 envenomations are reported every year, 65% of which are treated in hospital. The annual number of deaths from snake-bites could exceed 5000 and their distribution is probably uneven.

### Africa

In Africa, the prevalence of snake-bites (Table 3) is underestimated by health authorities, mainly because the reporting system is inaccurate. Moreover, the poor organization of health facilities in many countries complicates the management of patients and accounts for the great variation in the case fatality rate (15). Bites occur especially in plantations (16, 99). In industrial plantations the snake-bite incidence can be as high as ten times that in closed village plantations, largely because the industrial plantations attract more venomous snake species because of the abundance of prey they contain. In banana plantations mainly *Causus maculatus* (spotted night adder), an aggressive adder not really harmful to healthy adults, is involved. In palm tree plantations or in rubber plantations, black cobras (*Naja melanoleuca*) and green mambas (*Dendroaspis* spp.) are frequent. In forest regions, the gaboon vipers and their cognates (*Bitis* spp.) are especially responsible for numerous bites in village plantations and in rice fields. In savanna areas, the most abundant snakes are *Echis* spp. These Viperidae are probably responsible for the greatest number of accidents and deaths by envenomation in Africa (112). Towns also are not spared venomous snakes and snake-bites occur in the capital cities of African countries (16, 57). In some rural regions, during the rainy season, envenomations involve up to 10% of hospitalized patients. In Nigeria, a study in the Benue valley

estimated that the annual incidence of snake-bites was up to 600 per 100000 inhabitants and that the case fatality rate was 12.3%, mainly from *Echis ocellatus* bites (73). In the North Province of Cameroon, *E. ocellatus* is also responsible for a high morbidity (55 and J.-P. Chippaux, personal data, 1994). A survey in a rural area of Senegal showed that the annual mortality from snake-bites was 11.7 per 100000 inhabitants (69). In Benin, the overall incidence can reach 450 bites per 100000 in some rural areas, with 5.9% lethality (13), while notifications give annual morbidity and mortality as 70 per 100000 and 1 per 100000, respectively (30, 31); less than 30% of patients treated in health centres are admitted to hospital. In rural Kenya, snakebite incidence exceeds 150 bites per 100000 and mortality is estimated to be 6.7 per 100000 (98); however, about 70% of patients do not attend health centres.

In Africa (population, ca. 760 million), probably 1 million snake-bites occur every year involving 500000 envenomations, of which 40% are hospitalized. It is likely that about 20000 deaths per year occur as a result, although less than 10000 are reported by health services.

### Asia

In Asia, there is a wide variation in the incidence of snake-bites (Table 4), according to human activities and the snake species involved. In Japan, the general incidence of snake-bites is approximately 1 case per 100000 people; the case fatality rate is less than 1% and the overall mortality is about 0.5 per 100000. Nevertheless, the morbidity is more important in the south of the country, where it can reach up to 340 cases per 100000 residents (85) with a 0.7% case fatality rate (45). The incidence of snake-bites depends on human activities and snake behaviour (108). In the south of Japan, as in China (Province of Taiwan) and in south China, *Trimeresurus* spp. are responsible for at least half of the bites (85, 90, 92). *T. flavoviridis* (*habu*), one of the most common species, is encountered in human settlements (39); however, a control programme has been implemented successfully, leading to a decrease in the annual incidence of bites from about 300 to 150 per 100000 inhabitants (106). In the Republic of Korea, the incidence of *T. flavoviridis* bites remains unknown but quite low. The case fatality rate is about 5% from *Agkistrodon blomhoffi* bites (88). More than a half of the snake-bites that are hospitalized in Malaysia are caused by *Calloselasma rhodostoma* (89); and in Sri Lanka, the overall annual mortality rate of bites from this species exceeds 5.6 per 100000 and in some places can reach 18 per 100000 (90). About 40% of recorded deaths involve *Vipera russelli* (Russell's viper), while 35% involve *Naja naja* (common cobra). Less than 25% of patients are treated in hospital and only 43% of deaths are reported to health authorities (90, 95). In Asia, the mortality due to snake-bites seems to be highest in Myanmar, where 70% of the bites involve *V. russelli* (3, 61); however, these data for Myanmar may simply be a reflection of the better reporting system in this country, where the reporting of snake-bite deaths has been obligatory for many years. In India, data are fragmentary because less than 40% of snake-bite patients attend public hospital (87). *Echis carinatus* (the carpet or saw-scaled viper) occurs in both India and Pakistan, where it is responsible for a large number of snakebite cases, reaching 95% of envenomations in the State of Jammu (5). *V. russelli* also are frequently encountered in India and throughout south-east Asia. In Maharashtra State, in India, the annual incidence of severe envenomation is about 70 per 100000 inhabitants and the mortality rate is about 2.4 per 100000 per year (32).

In Asia (population, ca. 3500 million) as a whole there may be up to 4 million snake-bites each year, of which almost 50% are envenomed. Approximately half of the victims reach hospital and the annual number of deaths resulting can be estimated at 100000.

### Oceania

In Australia, the estimated annual incidence of snake-bites ranges from 3 to 18 per 100000 (114) with the average mortality rate being 4 per 100000 per year (101). Most of bites are due

to *Pseudonaja* spp., which are involved in about a half of deaths, as well as *Notechis* spp. and *Oxyuranus* spp., which together are responsible of nearly all the deaths from snake-bites in Australia. Bites occur during the warm months in the south of Australia and all year round in the tropical north of the country. In Papua New Guinea, the mortality from snake-bites in the Central Province is estimated at over 7.9 per 100000 inhabitants (49).

Most of the Pacific islands are free from venomous snakes except sea snakes, whose venom is neurotoxic, but which are not aggressive. From the whole of Oceania (population, ca. 20 million), more than 10000 snake-bites and 3000 envenomations are reported every year. Most individuals involved (70%) are hospitalized and 200 people die from such bites every year.

### Conclusion

It appears from the fragmentary epidemiological data presented in this article that snake-bites remain a public health problem in most countries, even if it is difficult to be precise about the actual numbers involved. The global figures given by Swaroop & Grab (102) over 40 years ago were greatly underestimated. The true incidence of and mortality from snake envenomations could exceed 5 million per year, with an associated mortality level of 125000 persons per year. About 2.5 million people are envenomed each year, half of whom request medical care, and probably more than 100000 individuals suffer from severe sequelae (Table 5).

The global disparity in the epidemiological data for snake-bites reflects the variation of health reporting accuracy and the great diversity of ecological and economic conditions throughout the world (Fig. 1). Agricultural activities are associated with most of the bites. The snake species involved can be very dangerous because of the toxicity of their venom or abundance in areas close to human settlements. Finally, health facilities and availability of antivenin have to be considered in implementing the treatment of envenomations. Clearly in developing countries, where snake-bites are the most prevalent, none of the required conditions for their correct management is fulfilled. In most developing countries, lack of medical attention, specially antivenin therapy, leads to high mortality levels. Considerable effort will be needed to develop studies on snake-bite epidemiology and improve the distribution and use of antivenin.

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(J.-P. Chippaux, Snake-bites: appraisal of the global situation, *Bulletin of the World Health Organization*, 1998, 76 (5): 515-524. J.-P. Chippaux is Director of Centre de Recherches sur les Meningites et les Schistosomiasis, B. P. 10887, Niamey, Niger.)