Syphilis and pseudo-syphilis / by Alfred Cooper.

Contributors

Cooper, Alfred, Sir, 1846-1908.
University of Leeds. Library

Publication/Creation

London : J. & A. Churchill, 1884.

Persistent URL

https://wellcomecollection.org/works/b67rxf46

Provider

Leeds University Archive

License and attribution

This material has been provided by This material has been provided by The University of Leeds Library. The original may be consulted at The University of Leeds Library. where the originals may be consulted.
This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

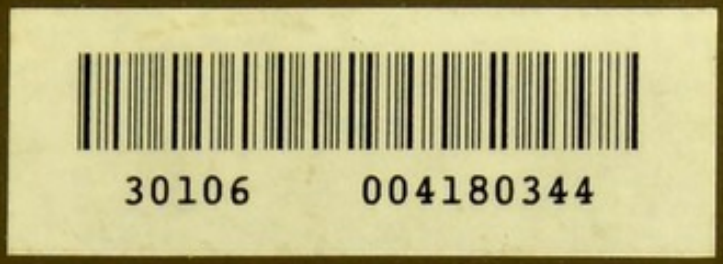
You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.

wellcome collection

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

The University Library
Leeds

Medical and Dental
Library


30106 004180344

University of Leeds Medical and Dental Library
DATE DUE FOR RETURN

CANCELLED

UPS/4442/5/82

STORE
WC 160
C00

LEEDS & WEST RIDING
MEDICO-CHIRURGICAL SOCIETY

SYPHILIS

AND

PSEUDO-SYPHILIS

SYPHILIS

AND

PSEUDO-SYPHILIS

BY

ALFRED COOPER, F.R.C.S. ENG.

VICE-PRESIDENT OF THE MEDICAL SOCIETY OF LONDON; SENIOR SURGEON TO OUT-PATIENTS, WITH CHARGE OF MALE WARDS, LOCK HOSPITAL; SURGEON TO ST MARK'S HOSPITAL, AND TO WEST END HOSPITAL FOR PARALYSIS AND EPILEPSY

LONDON
J. & A. CHURCHILL
11, NEW BURLINGTON STREET
1884

UNIVERSITY OF LEEDS
MEDICAL LIBRARY

604359

PREFACE

Having been Surgeon to the Lock Hospital for nearly twenty years, and largely engaged in private practice during a still longer period, I have necessarily had ample opportunities for the study of venereal disease in all its forms. The treatise which I now submit to the judgment of my professional brethren is the outcome of the experience thus gained. In it are embodied certain conclusions, to which my personal observation has led me, as to the nature of syphilis and the way in which it may be most rapidly and effectually treated.

It is right that, at the outset, I should clearly state that I am not an adherent of either the Unicist or the Dualist theory respecting syphilis. Whilst fully convinced that the disease is due to a specific poison, I believe that the so-called "soft" sore is in no sense truly syphilitic, and that no special virus is required for its production. This point appears to me to be definitively settled by the experiments recorded in the fourth chapter of this work.

I have discussed in considerable detail the effects of syphilis on the internal organs of the body, and especially on the nervous system. Modern research has shown in how great a proportion of cases serious lesions of the brain and spinal cord are of syphilitic origin. It is,

however, a satisfactory feature about these complications that in no class of nervous affections are better results obtainable by proper treatment thoroughly carried out.

My thanks are due to several friends for valuable suggestions. The chapter on Nervous Affections has been revised by Dr Buzzard, whilst those on Diseases of the Eye and Ear have been subjected to the criticism of Mr Anderson Critchett and Mr Dalby. To Mr Cartwright I am indebted for an account of his observations of the effects of hereditary syphilis on the teeth. I have also to thank my friend Dr T. P. Smith, of Reigate, for much kind assistance in the preparation of this work, particularly in matters involving reference to French and German authorities. I have thought it undesirable to encumber my pages with a crowd of notes, but when statements are quoted, either contradicting or supporting my own opinions, care has been taken in every case to give the author's name. I venture to hope that the work may be of service both to students and practitioners.

ALFRED COOPER.

9, Henrietta Street,
Cavendish Square;
May, 1884.

CONTENTS

CHAPTER I

HISTORICAL INTRODUCTION

	PAGE
The Epidemic of Syphilis in Europe in 1495	1
Syphilis a disease of great antiquity in the Old World. Chinese, Indian, Greek, and Roman writers	2
Syphilis among the Jews	3
Syphilis in the Middle Ages	4
Syphilis at Naples in 1494	5
The Disease supposed to have been brought from the West Indies by the followers of Columbus	6
Its Spread throughout Europe	8
Supposed to be identical with Gonorrhœa, but distinguished therefrom by Balfour and Bell	9

CHAPTER II

THE GEOGRAPHICAL DISTRIBUTION OF SYPHILIS

Syphilis in Europe	11
The Disease in Asiatic Countries	13
The Disease in Africa and in America	14
Circumstances influencing the frequency and spread of the Disease	15

CHAPTER III

THE ORDINARY COURSE AND SYMPTOMS OF SYPHILIS

PAGE

Definition and Origin of the term 17
Local Symptoms after Infection—Incubation—Development of Induration—Constitutional Symptoms . . . 18
Theories as to Action of the Virus 19
Local Manifestations—Skin—Mucous Membranes—Glands . 21
Further Constitutional Symptoms; Differences therein in Different Cases 22
Gummatous Formations 24
The Stages of Syphilis, terms used regarding . . 26
Possibility of Recovery from Syphilis, and Mortality due to the Disease 28

CHAPTER IV

THE NATURE AND CAUSE OF SYPHILIS

Bassereau's Theory of Hard and Soft Sores . . 30
Rollet and the Duality Theory 31
Danielssen's Experiments 32
Hunter's and Ricord's Views—Theories at present in vogue—Unity and Duality 33
Facts and Difficulties connected with the Unity and Duality Theories 36
A Third Theory, more satisfactory than either. Experiments of Drs. Pick and Wigglesworth . . . 40
The Author's Views with regard to Syphilis, and its Relation to the Soft Venereal Ulcer 42
Nature of the Syphilitic Virus 43

CHAPTER V

VEHICLES OF THE SYPHILITIC POISON, AND THE MODES OF ITS COMMUNICATION. SYPHILIS AND VACCINATION

Vehicles of the Syphilitic Poison 47
The Modes in which Syphilis may be Communicated . . 48

PAGE
Syphilis and Vaccination 50
Precautions to be observed in order to avoid risk in Vaccination 53

CHAPTER VI

THE SOFT CHANCRE. PSEUDO-SYPHILIS. THE CHANCROID

Its Peculiarities and Characteristics . . . 54
Parts on which Found, Course and Duration . . 56
Diagnosis of a Soft Chancre 57
Minute Anatomy 59
Complications—Gangrene, Phagedæna, Phymosis, Paraphymosis, Bubo 59
Treatment of the Soft Chancre and its Complications . 67

CHAPTER VII

THE INDURATED CHANCRE. SYPHILIS

Parts on which most Common, Manner of Appearance, and Forms Assumed 75
Minute Anatomy of the Hard Sore . . . 80
Diagnosis of the Hard Chancre 81
Differential Diagnosis 83
Treatment 83
Glandular Induration connected with the Hard Sore . . 87

CHAPTER VIII

CONSTITUTIONAL SYPHILIS. SYPHILITIC FEVER. AFFECTIONS OF THE SKIN—ROSEOLA, PAPULES, PUSTULES, SYPHILITIC TUBERCLES, GUMMATA, RUPIA, ETC.

Secondary Symptoms in General 90
Syphilitic Fever; occasional Difficulties in Diagnosis . 92
Syphilitic Skin Affections 94
Peculiarities of the various Eruptions . . . 95

PAGE

Roseola Syphilitica 96
Diagnosis 97
The Papular Syphilitic Eruptions . . . 98
The Lenticular Syphilide 99
Syphilitic Psoriasis of the Palms and Soles . . . 101
Broad Condylomata 102
The Miliary Syphilide 104
The Pustular Syphilides 105
The Acne-form Syphilide 106
The Variola-form Syphilide 107
Syphilitic Impetigo 108
Syphilitic Ecthyma 109
The Miliary Pustular Syphilide 110
Gummous and Tuberculous Syphilides . . . 111
The Ulcerating Syphilide 113
Rupia Syphilitica 115
The Pigmentary Syphilide 117

CHAPTER IX

SYPHILITIC AFFECTIONS OF THE HAIR AND NAILS

Alopecia Syphilitica 119
Paronychia Syphilitica 120
Onychia Syphilitica 121

CHAPTER X

SYPHILIS OF THE MUCOUS MEMBRANE

General Characters of Syphilitic Affections of the Mucous Membrane 123
Erythema 124
Papular Eruptions 124
Gummatous Tubercles 126
Acute Syphilitic Angina 127
Papules and Gummata of the Mouth and Throat . . 128
Syphilitic Affections of the Pharynx . . . 130

CHAPTER XI

SYPHILITIC AFFECTIONS OF THE TONGUE

PAGE
Mucous Papules 133
Induration and Gummatous Tumours . . . 135

CHAPTER XII

SYPHILITIC AFFECTIONS OF THE LARYNX

Laryngeal Catarrh and Mucous Papules . . . 139
Gummatous Growths 140
Syphilitic Ulceration 141

CHAPTER XIII

SYPHILITIC AFFECTIONS OF THE NASAL MUCOUS MEMBRANE

Nasal Catarrh—Papules—Gummatous Growths . . 144
Syphilitic Ozæna 145

CHAPTER XIV

SYPHILITIC AFFECTIONS OF THE ALIMENTARY CANAL AND OF THE ABDOMINAL ORGANS

Syphilitic Affections of the Œsophagus . . . 148
Syphilitic Affections of the Stomach and Small Intestines . 150
Syphilis of the Rectum 151
Syphilitic Affections of the Liver and Pancreas . . 155
Syphilitic Affections of the Spleen and Kidneys . . 160

CHAPTER XV

SYPHILITIC AFFECTIONS OF THE ORGANS OF THE THORAX, AND OF THE ARTERIES AND VEINS

Syphilis of the Lungs 162
Syphilis of the Heart 164

PAGE
Syphilitic Affections of the Arteries and Veins . . 165
Syphilis and Aneurism 168
Lesions of the Veins 171

CHAPTER XVI

SYPHILITIC DISEASES OF THE PERIOSTEUM, BONES, JOINTS, CARTILAGES, MUSCLES, ETC.

Syphilitic Periostitis 173
Syphilitic Affections of the Bones 175
Syphilitic Diseases of the Joints 181
Affections of the Bursæ 184
Affections of Cartilage 185
Affections of the Muscles 186
Affections of the Tendons and Tendinous Sheaths . . 189

CHAPTER XVII

SECONDARY AND TERTIARY SYPHILITIC AFFECTIONS OF THE ORGANS OF GENERATION

Erythema of the Vulva—Mucous Papules . . . 191
Gummata of the Genital Organs 193
Syphilitic Affections of the Testicle . . . 195
Affections of the Ovaries and Uterus . . . 198

CHAPTER XVIII

SYPHILITIC AFFECTIONS OF THE EYE

Affections of the Eyelids 201
Affections of the Conjunctiva 202
Affections of the Sclerotic and Cornea . . . 203
Syphilitic Iritis 205
Affections of the Choroid 210
Syphilitic Retinitis 213
Optic Neuritis 215

PAGE
Atrophy of the Optic Nerve 217
Paralysis of the Muscles of the Eye . . . 218
Amblyopia, Amaurosis, &c. 219

CHAPTER XIX

SYPHILITIC AFFECTIONS OF THE EAR

Affections of the External Ear, Tympanum, and Labyrinth . 220

CHAPTER XX

SYPHILITIC AFFECTIONS OF THE NERVOUS SYSTEM

Various Lesions of the Nervous System due to Syphilis—the Brain and Spinal Cord 223
Connection between early Rupial Ulceration and Cerebral Symptoms 224
Lesions of the Membranes 225
Lesions of the Vessels 226
Cerebral Gummata 227
Symptoms of Cerebral Syphilis 229
Disorders of Sensibility and of Motor Power . . 231
Psychical Disturbances 235
Various Phases often Presented by Syphilitic Affections of the Nervous System 237
Prognosis 238
Treatment 239
Syphilitic Affections of the Spinal Cord . . . 240
Locomotor Ataxy and Syphilis 242
Syphilitic Affections of the Nerves . . . 244

CHAPTER XXI

MALIGNANT SYPHILIS

Characteristics of Malignant Syphilis . . . 246
Course of Malignant Syphilis 248
Theories as to its Causation 249
Treatment 250

CHAPTER XXII

SYPHILITIC RE-INFECTION

PAGE
Cases of Syphilitic Re-infection 252
Question as to Curability of Syphilis . . . 254

CHAPTER XXIII

THE GENERAL DIAGNOSIS AND PROGNOSIS OF SYPHILIS

Diagnosis 255
Prognosis 257

CHAPTER XXIV

HEREDITARY SYPHILIS

Early Theories regarding the Transmission of Syphilis from Parents to Offspring 262
Influence of the Father 263
Infection of the Mother through the Fœtus; Colles' observations 264
Objections to Colles' Law 266
Influence of the Mother 268
Stage of the Disease in the Parents as Influencing the Symptoms in the Child 269
Infection of the Child through the Utero-placental Circulation 270
Latency of the Symptoms of Hereditary Syphilis . . 272
Symptoms of Hereditary Syphilis 274
Affections of the Skin 276
Roseola Syphilitica 278
Moist Papules 279
Pustular Eruptions 280
Affections of the Mucous Membranes . . . 281
Syphilitic Coryza 283
Affections of the Eyes and of the Teeth . . . 284
Affections of the Ear 286
Affections of the Bones 287
Affections of Internal Organs 290

PAGE

The Nervous System 291
Diagnosis of Hereditary Syphilis 292
Prognosis 294
Treatment 295

CHAPTER XXV

THE RELATIONS BETWEEN SYPHILIS AND OTHER DISEASES. SYPHILIS AND WOUNDS

Syphilis and Acute Diseases 297
Syphilis and Scrofula, Gout, &c. 298
Syphilis and Wounds 299
Syphilis as a Cause of Constitutional Disorders of Childhood . 301

CHAPTER XXVI

MEDICO-LEGAL AND SOCIAL QUESTIONS CONNECTED WITH SYPHILIS. SYPHILIS AND MARRIAGE

Syphilis in Cases of Rape 303
Syphilis in Wet-nurses and Sucklings . . . 304
Syphilis Communicated by Midwives . . . 306
Syphilis and Marriage 307

CHAPTER XXVII

THE PREVENTION OF SYPHILIS

The Prevalence of Syphilis 310
Prostitution the Cause of its Frequency . . . 311
Various Contagious Diseases Acts and their effects . . 312
Practical Abolition by the House of Commons of the Contagious Diseases Acts and the results . . . 313

CHAPTER XXVIII

THE TREATMENT OF SYPHILIS

PAGE

Objects to be Attained—the Results of the Expectant Treatment 316
Treatment by Mercurials 317
Precautions to be Observed, and Duration of Treatment . 318
Choice of Mercurial Preparations 320
Inunction-method 321
Mercurial Vapour-baths 322
Baths containing the Perchloride 324
Hypodermic Injections of Mercury 324
Contra-indications to the Use of Mercury 325
Precautions in Scrofulous Subjects 325
Local Treatment of the Manifestations of Syphilis . . 326
Iodide of Potassium, its Place in the Treatment of Syphilis . 327
Methods of Administration 328
Contra-indications 329
Combinations of Mercury and Iodine 329
Vegetable Remedies for Syphilis—Sarsaparilla, Guaiacum, Stillingia 330
Rules as to Mode of Living, Diet, &c. 330
Baths; Thermal Sulphur Springs 331
Hydropathic Measures 332
Syphilisation 332

LEEDS & WEST RIDING
MEDICO-CHIRURGICAL SOCIETY

SYPHILIS AND PSEUDO-SYPHILIS

CHAPTER I

HISTORICAL INTRODUCTION

In examining the writings of authors from an early period down to comparatively modern times, for the purpose of discovering whether they contain any statements which may justly be held to refer to syphilis, we come to a time which, certainly so far as Europe is concerned, forms an epoch, if not a starting point, in the history of this complaint. From causes which will be presently discussed the last decade of the fifteenth century is the period from which a definite history of syphilis commences, and the correctness of this statement is quite independent of the question as to whether or not syphilis was an absolutely new disease in Europe, at the time when it appeared in so virulent and striking a form. The controversies which have raged on this latter question have assumed enormous dimensions, but no generally accepted decision has been arrived at, though it would appear that the balance of probability is strongly in favour of one rather than of the other view.

There is no doubt that a severe epidemic of unmistakable syphilis raged in Europe about the year 1495, and some authors believe that this was its first appearance on this continent. Others maintain that syphilis has existed in Europe from the earliest times, but that the severity of the epidemic in 1495 caused it to be regarded as a new

disease. A brief sketch of the controversies, and of the evidence with regard to the existence of syphilis in other continents, will indicate the degree of probability to be attached to one or other of these views.

As regards the countries of the old world, syphilis is certainly a disease of great antiquity in China and India. In Chinese medical writings, some of them dating even further back than 2000 B.C., there are descriptions of contagious ulcers on the genital organs and of ulcerations of the mouth, throat, nose, and other parts, which correspond very clearly with the appearances due to syphilis. In the early part of the last century, the reports of Jesuit missionaries stated that the venereal disease was not only known among the Chinese at Pekin, but was also extremely common. In India, a medical work called the "Suçrutas" written about the year 400, and intended as a complete system of Indian medicine, contains numerous passages which are justly held to refer to syphilis. Not only local but general symptoms are described. The author mentions ulcers on the genitals, warty excrescences in various parts, diseases of the eyes, ears and nose, buboes and nodes, and these latter affections are considered to be the consequences of the ulcers.

In Greek and Roman medical and non-medical literature there are numerous passages containing references to disorders of the genital organs. Different interpretations have been attached to these, according as the writer wished to find evidence for or against the existence of syphilis in Europe prior to 1495. Some passages in Hippocrates contain allusions to ulcerations of the mouth, sores and fungous growths on the genital organs, diseases of the eye, and various eruptions on the skin. Celsus devotes an entire chapter to disorders of the genital organs. He mentions in particular ulcers of two kinds, the first "clean and dry" and the second "moist and purulent." He also describes phymosis as due to ulcers, and directs that the prepuce should be drawn back in order to discover them. He mentions a phagedænic form

of sore on the penis, and likewise ulcers of the mouth and tonsils and certain diseases of the skin. Another Latin writer, Aretæus, describes destructive ulceration of the uvula, hard palate and adjoining parts. Other writers mention mucous patches and chronic ulceration of the bones. With regard to non-medical writers, the works of the Latin poets, Martial, Juvenal, and Horace in particular, contain numerous allusions to venereal diseases, though several of such passages may admit of a different interpretation. The writings of Celsus, however, contain abundant evidence of the existence and recognition of venereal disorders at his epoch, and no more terse description of the hard and soft sores can be given than that which is to be found in the works of this author. It may be observed that it was the rule in his day for physicians and patients to exhibit great reticence with regard to any diseases of the genital organs.

Whether syphilis existed among the Jews is a question which cannot be determined from any passages in the Hebrew writings which have been supposed to refer to this subject. There is no definite resemblance between the symptoms of syphilis and those of any of the diseases mentioned in the Old Testament. The idea has indeed been mooted that leprosy was a form of syphilis, and it is by no means improbable that the former term was often applied to symptoms which were in reality manifestations of syphilis. There is, however, this fundamental difference between the diseases, the hereditary transmission of leprosy is not invariable, whilst the transmissibility of syphilis from parent to offspring is one of its most prominent features. Moreover, in those cases of leprosy in which hereditary tendency can be traced, the disease seldom makes its appearance before puberty. Some authors believe that leprous affections of the genital organs were the parents of syphilis, and that the urethral discharges, the ulcers, condylomata and fissures, which were even in the time of the Roman empire of such frequent occurrence, were, so to speak, a local reflex of the then

generally diffused leprosy. It is far more probable, however, that these affections were really of an ordinary syphilitic character. We know that such forms of disease as scherlievo and radesyge, once referred to lepra and considered to be peculiar endemic affections of the skin, are really of syphilitic origin. The ancient writers had no assistance from the history of the case, for they were unacquainted with the fact that local venereal ulceration gives rise to cutaneous and other disorders. The connection between primary and secondary syphilis was unknown, and an extensive syphilitic disease of the skin was looked upon as an independent affection, and in all probability was often ascribed to leprosy. Such symptoms as ulcers of the throat, destruction of the nose, falling off of the hair, &c., are said to have occurred in severe cases of leprosy, but it is more than likely that they were of venereal origin.

Between the time of Celsus and the middle ages there are few records from which an account of venereal disorders can be gleaned. Local diseases of the genital organs and leprosy are, however, often alluded to. Some passages seem to show that the difference between hard and soft sores was already appreciated, not, however, as regards the special liability of the former to be followed by constitutional symptoms. It would appear that general infection of the constitution following an ulcer on the genitals was recognised as far back as the eleventh century. There is one passage from a writer of the fourteenth century, which proves that the indurated chancre was recognised and its consequences attributed to their proper source. Valesus, of Tarentum, stated, "Virga enim erat circumdata toto ulcere cancroso cum duritie. . . . et homo erat jam discoloratus et semi-mortuus." It is possible that, as already mentioned, the manifestations of syphilis were very generally ascribed to leprosy. The prevalence of this latter disease decreased towards the end of the fifteenth century, owing perhaps to the cessation of the Crusades. Be this as it may, it is certain that

towards the close of that century, what appeared to be a new disease began to attract universal attention in western Europe.

If the supposition be adopted (and no other seems tenable) that syphilis existed in Europe from the earliest periods of which there are any records, it is necessary to seek for reasons to account for the very virulent and widespread character of the epidemic in question. It is probable that a concurrence of circumstances favoured the aggravation of the virus. The extreme dissoluteness of the time, the inattention to ordinary hygienic rules, especially those of personal cleanliness, the inclemency of the season, inundations and dearths, the prevalence of scurvy and malignant fevers have been adduced as forming a combination, the union of which with the syphilitic poison already present, may suffice to explain the singularly grave constitutional effects, differing from any known before or since that date. It is likewise probable that a severe type of syphilis was brought to Europe at this period, and, favoured by the above-mentioned circumstances, became rapidly superadded to the disease already existing. It is a well-known fact that the spread of syphilis is considerably accelerated, and the gravity of the symptoms very much increased, by unhygienic conditions. One marked example of this kind may be here cited. In Finland the disease was almost unknown before the beginning of the seventeenth century, or the period of the thirty years' war. It then broke out and has since increased to so fearful an extent that, out of the limited population, within two years during the present century, 6000 cases have been treated in the Lock Hospital, and it is regarded by the authorities as the worst of all epidemics.

We learn from history that in the autumn of 1494, Charles VIII, King of France, invaded Italy, and marching through Lombardy, Tuscany, and the States of the Church, he entered the Kingdom of Naples in February of the following year, claiming that territory as his own by hereditary right. He left Naples at the end of May

and returned to France a few months afterwards, leaving a portion of his army behind him. After a time the Neapolitans, having received aid from Spain, drove out the French and compelled them to quit the kingdom towards the end of the year 1496. During this period of about two years it is alleged that the venereal disease assumed the form of an intensely virulent and wide-spread epidemic, or, as others believe, it made its appearance in Europe for the first time. Those who adopt the latter theory connect the appearance of the disease at this time with the return to Europe of Christopher Columbus from America. This discoverer first left Spain in 1492, and reached Haiti, but he returned thence a few months afterwards. He again left Spain in September, 1493, and arrived in Hispaniola in November of that year. He appears to have been absent from Spain for three years, during which time portions of his fleet made several voyages to and fro, and arrangements were projected for the dispatch of a ship from Spain and from the Antilles every month for trading purposes. These arrangements appear to have been perfected before Columbus returned to Spain in June, 1496. It is asserted that on this occasion he brought with him two hundred soldiers infected with the venereal disease, and that the same complaint had appeared among persons who had previously returned from the West Indies. It is further stated that the venereal disease was a common distemper in Hispaniola and the neighbouring islands; that it was thence transported into Spain; and, lastly, that a remedy was sought for it from the same or neighbouring islands, whence it sprung, and was pointed out by some of the natives, when no medicine of sufficient efficacy could be found for it in Europe. All these assertions are probably true. There is contemporary medical evidence to the effect that the disease was a very common one in the West Indies, and that many of the Spaniards were found to be suffering from it on their return to Europe. The remedy alluded to was guaiacum, which was introduced into Europe in 1508. The first importer went

to the West Indies to discover how the natives there treated syphilis. He ascertained that guaiacum was employed and he returned to Spain and commenced practice himself.

There can be little doubt that the disease thus imported from the West Indies was of a very severe type, or that the circumstances of the time were favorable to its rapid spread. In the Neapolitan, or rather in the Spanish, army, which was defending the Kingdom of Naples against the French, there were doubtless many soldiers who, returning from the West Indies, either in the first voyage with Columbus in 1493, or in some of the ships which afterwards returned to Spain, were still infected with the venereal disease, or had, at least, contracted it from some of the camp-followers. Many of the Neapolitans would probably also become infected, and as it appears that the success of the war continued doubtful for two whole years, and the same towns were taken and retaken by both parties, the disease would, of course, spread to the French invaders. It is difficult to conceive of any circumstances more favorable to the multiplication of cases of infection, and it is no wonder that the disease assumed an epidemic form among the three principal nations in Europe. Its spread was further promoted by the mutual commerce which was carried on. The disease shortly afterwards became very prevalent in Portugal; it was there named the "Spanish disease," while the English, among whom the severity of the symptoms began to attract attention, called it the "French disease." Each nation endeavoured to cast upon some neighbouring nation the disgrace of having introduced the disorder.

In the century which followed the discovery of America, the spread of syphilis was further facilitated by the banishment of the Jews and Mahometans, who were driven out of Spain after the conquest of Grenada by Ferdinand and Isabella. Many of them passed over into Africa and carried the disease with them. The sea-ports of the Mediterranean also became rapidly infected. There can be

no doubt as to the great virulence of the syphilis which prevailed at this period, and it was this marked characteristic which caused it to be regarded as a new disease ; but we are by no means justified in accepting this belief as well-founded, and in dating the origin of syphilis in Europe from the time of the Neapolitan epidemic. It is conceded even by those who adopt this theory of the modern origin of syphilis, that the disease has often changed its character both as regards its violence and the nature of its symptoms.

This epidemic appears to have raged for about thirty years, towards the close of which period certain other of its symptoms attracted attention, and are mentioned in the works of the time. These were exostoses and other diseases of the bones and warty growths. A few years later the severity of the disease began to abate, and other symptoms are noticed. Thus in 1534 mention is made of tumours of the inguinal glands and falling off of the hair. It is stated that suppuration of the glands cured the disorder. The same account alludes to the hardness of the ulcers on the penis. Other symptoms which were then common were ulcers of the palate, uvula, fauces, and nostrils, nocturnal pains, gummata, and pustules and crusts all over the body. The falling off of the hair and the consequent baldness are frequently alluded to. About 1550 a virulent gonorrhœa appears to have attracted much attention, and was of course regarded as a symptom of syphilis. During the latter half of the sixteenth century the epidemic form of syphilis gradually disappeared.

There is little to add with regard to the history of syphilis since the last-mentioned period. Certain epidemics, presenting in their symptoms more or less resemblance to syphilis, have been described as occurring during the seventeenth and eighteenth centuries. These outbreaks were of an endemic character. Thus, a local outbreak occurred at Brünn in 1578. The complaint called yaws or frambœsia, outbreaks of which are not

uncommon on the West Coast of Africa, is regarded as a manifestation of syphilis. So also the sibbens of the West of Scotland and the radesyge of Sweden and Norway are probably identical with syphilis. The Amboyna pimple, an epidemic of contagious herpes, and the pian of Nerac are likewise of the same character. They obtain their names from the predominance of some particular symptom. The most recent of these epidemics occurred in 1800 at Scherlievo, a village near the coast of the Adriatic. All these attacks presented a certain resemblance as regards the symptoms. Affections of the mouth and throat, eruptions on the skin, nocturnal pains in the bones and joints, tubercles followed by severe and deep-seated ulceration, caries of the bones, falling off of the hair, are more or less common in all of them. The extension, and in some degree the character, of the symptoms were doubtless influenced by the surrounding conditions. Scurvy was often simultaneously present, and must have aggravated all symptoms.

It has been already mentioned that certain writers in the description of the symptoms they witnessed during and after the great Neapolitan epidemic, expressly referred to the callous character of the sores. The induration was soon regarded as symptomatic of a venereal ulcer. Frequent reference is made to it after the middle of the sixteenth century.

It is somewhat singular that in the early part of the sixteenth century gonorrhœa was recognised as a disease distinguishable from others communicated through sexual intercourse, and yet at the end of the seventeenth century the distinction was lost sight of. This at least is the inference that may be drawn from Sydenham's words, "Cujus virus cum per gonorrhœam non ejiciatur, sanguinis massam dicto citius pervadit inficitque." The question, however, was not suffered to rest, but it was not until the second half of the eighteenth century that the theory of the identity of syphilis and gonorrhœa was firmly opposed by Balfour, of Edinburgh, and Benjamin

Bell, in opposition to John Hunter, who, as is well known, maintained the identity of the two diseases. In May, 1767, Hunter inoculated a person (probably himself) with urethral pus, believing it to be the product of gonorrhœa. It was, however, in all probability either the secretion from a concealed urethral chancre or some urethral discharge from a patient the subject of secondary syphilis. The result of the inoculation was not only a local ulcer, but also an affection of the throat, roseola, and other manifestations of the constitutional disease. This experiment was regarded as sufficient to establish the identity of the two diseases, and of the gonorrhœal and syphilitic poisons. The differences in the manifestations were supposed to depend upon the difference in locality; inoculation on a mucous membrane was thought to produce gonorrhœa, while inoculation on the skin gave rise to an ulcer. Bell's experiments showed the incorrectness of this theory, but the question was finally set at rest by those of Ricord, who established the axiom that the gonorrhœal secretion can never produce a chancre, and that the pus of a chancre can never produce gonorrhœa, and therefore that the contagium of gonorrhœa is different from that of a chancre and that of syphilis. Thus it came to pass that gonorrhœa was separated from the definition of syphilis. So late, however, as 1829 we find Sir A. Cooper denouncing the practice, common in London hospitals, of giving mercury for gonorrhœa. The next important landmark in the history of syphilis was the separation by Bassereau in 1852 of the primary sores into two classes, named respectively the soft and the hard. The further development of this theory, and its influence upon the doctrines of the present day, will be described in a subsequent chapter.

CHAPTER II

THE GEOGRAPHICAL DISTRIBUTION OF SYPHILIS

There would appear to be scarcely any part of the world absolutely free from the invasion of syphilis; but a brief account of our information as to its prevalence in different countries will show that great differences exist with regard to the frequency of its appearance and the intensity of its symptoms. As a matter of course, our information is more extended and exact with regard to Europe than for other quarters of the globe. To begin with the northern countries of that continent, all accounts agree in reporting a uniform and wide-spread prevalence of the disease in North Germany, Sweden, Denmark, and in most parts of Russia. With regard to the last-named country, I may mention that when I was in St. Petersburg in 1874 I was surprised at the small number of cases of syphilis in the Lock Hospital of that city, and at the very mild character of the disease, which was generally treated with a few inunctions. The medical officer informed me that the mildness of the disease was to be attributed to the very strict manner in which the police regulations and inspections were enforced. There were a few very bad cases in the hospital, but these had come from the interior of Russia, and had not been treated before admission. It is somewhat remarkable that syphilis is all but unknown in Iceland. It has been introduced over and over again into that country, but it has never made any progress and has never taken root. This immunity is rendered more remarkable from the fact that lepra is endemic in that island, and also in view of the prevalence of a severe and

malignant form of syphilis in Northern Russia, the Baltic provinces, Finland, &c. The same holds good of Sweden and Norway. In our own country the disease is extremely prevalent—far more so, indeed, than is popularly supposed—and this prevalence is likely to become even more marked and decided in consequence of the free licence given to prostitutes to ply their trade in any public places they may select. England deservedly has the credit of preserving syphilis and pheasants better than any other country. The practical repeal of the Contagious Diseases Act, recently effected by a vote of the House of Commons, in servile obedience to the demands of an ignorant and fanatical section of the populace, will no doubt further aid the spread of syphilis. This subject will, however, be more fully referred to in the chapter on the prevention of the disease.

In the central countries of Europe, syphilis is more or less common in France, Germany, and Belgium, its prevalence in particular districts depending upon various social conditions, such as the crowding together of the population in large towns and the number of military stations, and being remarkably influenced by the means adopted for preventing the spread of the disease. In Rome and Southern Italy the complaint is more frequent than in the north of that kingdom. It is said to be especially common among the Jews of Galicia, many patients suffering from plica Polonica exhibiting syphilitic ulcers on the scalp. Hereditary syphilis is also very common among the people. It is, as Lancereaux points out, extremely difficult to ascertain positively the relative frequency of syphilis in a given nation or locality. As a general rule, only a small proportion of those affected come under treatment in the various hospitals; some consult private practitioners, while a large number neglect the disease altogether or have recourse to the advice of charlatans. The records of military hospitals form the only reliable bases for statistics. In the English army the frequency of venereal disease may be gathered

from the fact that before the repeal of the Act the annual admission per 1000 of strength for primary venereal sores varied from 123 in non-protected stations, to 50 in stations where the Act was in force, and that a loss of service of more than eight days per man in the home army was occasioned by these complaints. In the French army the loss of service is less than four days per man. To gain any adequate notion of the amount of mischief inflicted by this scourge on the army alone, it would be necessary to ascertain how many men were invalided and died every year from lesions due to syphilis. The records of the post-mortem room at Netley Hospital show that marks of inveterate syphilis are often found in the bodies of men who die from *what are considered* other diseases. The complaint is less frequent in Belgium than in France, and in France than in England, and this difference depends entirely upon the means adopted to check the spread of the disorder.

In most Asiatic countries the disease has long been known and is still very prevalent. With regard to India, the prevalence of venereal diseases among the troops has been much reduced by the adoption of preventive measures. Police regulations and surveillance are now enforced in most stations, and in some of the larger ones, Lock hospitals have been established. Still, however, venereal disease is one of the chief causes of admission. Among the natives, syphilis is very common. The disease is met with everywhere in China, but more especially in the larger cities and those near the coast. In some districts it would appear as though the majority of the inhabitants had suffered from syphilis, the symptoms of which, however, in the Chinese are not marked by extreme severity. A kind of general syphilisation is thought to have lessened the virulence of the infection. Europeans, however, contracting the disease from Chinese women, often exhibit the more serious features of the disease. In Japan, where prostitution is extremely common, syphilis prevails extensively, though in a mild form. In the Indian

Archipelago, more especially in the coast towns, syphilis is very prevalent and commits serious ravages on the native population. It has of late years been introduced into the Sandwich islands and has spread with great rapidity.

From various parts of Africa we have accounts of the prevalence of syphilis. The central portion of Southern Africa, according to Dr Livingstone, forms an exception to the general rule. All along the west coast the disease is very common and prevails in a very severe form. In Southern Africa, and in the Mauritius and adjacent islands, syphilis is very prevalent and its course very acute and rapid. The same holds good of Madagascar, into which island the disease has been introduced in recent times. In Abyssinia the disease is endemic though of a mild character. In Egypt its symptoms are well known, and are treated by the native doctors by sarsaparilla and vapour baths. In Nubia a mineral substance containing mercury is used with good effects. In Algeria the disease is common and very widely spread, especially since the French occupation. In some parts the peculiarly severe character of the cutaneous symptoms would appear to be a remarkable feature of the disease.

With regard to America, the question of that country being the birthplace of the disease has been already discussed. The general rule would appear to be that the frequency and prevalence of the disorder among the native population are in direct proportion to the facility for and intimacy of the relations between them and the European colonists. Even now syphilis is all but unknown among certain Indian tribes who have little or no intercourse with Europeans. In the United States the disease prevails much as it does in Europe; among the negroes it is common and severe. In Canada syphilis is endemic among certain native tribes; it is also very prevalent in Columbia and Russian North America. In Mexico the disease is said to be more common than in any other part of the world; Zeissl states that its occurrence is a topic

of common conversation and is alluded to as freely as an ordinary cold is with us. The frequency of indurated sores, the early appearance of the constitutional symptoms, and the intensity of the eruptive fever, are common features of the disease as it appears in Mexico. In the Antilles syphilis is said to be particularly rare, a remarkable fact, inasmuch as those islands were believed to be the cradle of the disease. Syphilis is also rare in many of the West Indian islands. Venereal diseases have never been very prevalent in Jamaica, Trinidad, and Barbadoes. In South America, on the contrary, especially in Brazil, Chili, Peru, and the Argentine Republic, syphilis is very common and widely spread.

From the above account of the geographical distribution of syphilis it would appear that scarcely any part of the world is exempt from the ravages of the disease, that its prevalence increases with the development of civilisation and the facilities for intercourse, and that the type of the disease varies in different localities. With regard to the causes of these variations some influence must be attributed to climate and race, while other factors, and among them excesses of all kinds, likewise co-operate to a greater or less extent. As a general rule the disease presents its worst features in large seaport towns, being aggravated, as we may suppose, by the frequent and promiscuous intercourse, by excesses, exposure to cold and damp, want of cleanliness, recklessness as to consequences, and similar conditions, obviously prevalent in such localities. Not only does the virus transmitted through such individuals become more potent, but those who expose themselves to infection are less able to resist its noxious effects than others differently situated, and thus it is that in such localities the severest consequences of the disease are frequently manifested in those who are the subjects of it. To this must be added that individual differences exist; no person, free from syphilis, is proof against infection, but there is evidence that of two persons infected from the same source, one may suffer from the severer

symptoms of the disease, while the other may be comparatively slighly affected. There is no reason for supposing that the epidemics of former centuries differed from the disease as at present seen, except in their intensity and the rapidity with which they spread, but these characteristics may be easily accounted for. Many of them were connected with prolonged campaigns, in which it is certain that all the conditions favorable for the rapid growth of the disease in its severest forms prevailed to the fullest extent. The influence of climate appears to be quite subordinate to that of the conditions above described, though it is probable that, *cæteris paribus*, the course of the disease is milder and more favorable in southern and temperate climates than in those characterised by either extreme of temperature. As the course of the disease is influenced by the state of the general health, any specially unfavorable climatic conditions would, in all probability, *pro tanto*, aggravate the symptoms of syphilis. The influence of preventive measures on the spread of the disease will be hereafter referred to.

CHAPTER III

THE ORDINARY COURSE AND SYMPTOMS OF SYPHILIS

Definition.—Syphilis is a chronic contagious disease, due to the action of a specific virus, which, having been locally introduced at any part of the skin or mucous membrane of a healthy person, gradually pervades the entire organism, producing various lesions in some or all the systems of the body in a more or less regular order, and capable of being propagated to healthy (*i.e.* non-syphilitic) individuals by inoculation with the secretions from the sores to which it gives rise, and also, to a great extent, of being transmitted to the offspring of those who are suffering from the disease.

Origin of the Term.—The etymological origin of the term syphilis is uncertain. Littré, in his 'Dictionnaire de la langue Française,' says that the word was invented by Fracastor in his Latin poem on the 'Venereal Disease' (printed at Verona, 1530); it is not known whether he derived it from any other word. Fracastor's legend is that a herdsman of King Alkithous, by name Syphilus, was afflicted with this disease by Apollo, as a punishment for paying divine homage to the king instead of to the god. Some authors suggest that the word is derived from σῦς a pig and φιλέω to love; others think that it comes from σίφλος, a contracted form of σιπαλός, impotent, or from σύν with and φιλέω. Whatever the source of the first syllable may be, it seems certain that the remainder of the term has its origin in the word φιλεῖν. Fallopia says, "Hic vocavit syphila morbum istum, quia ex amore . . . ut plurimum suboritur."

Before describing in detail the various manifestations of syphilis as they appear in the different organs of the body, a short description will be given of the ordinary course and symptoms of the disease.

The syphilitic poison having been brought into contact with an abraded surface of skin or mucous membrane, remains apparently latent for a period which varies greatly in different cases, but which may be taken, on an average, to be about four weeks. In artificial inoculation on the healthy skin, some redness is first observed, but this disappears and no change can be detected until the above-mentioned interval has elapsed. A little red papule or nodule then makes its appearance, increases in size, undergoes exfoliation or superficial ulceration, or gradually becomes absorbed without any destruction of tissue. In ordinary syphilitic infection, however, it often happens that the poison is implanted upon an excoriated surface, and that the syphilitic virus is mixed with various irritating secretions. Under such circumstances the erosion remains, or develops into an ulcer which subsequently becomes indurated. Even without previous decided erosion, the admixture of irritative purulent matter, *e.g.* from a soft sore, causes hyperæmia and swelling, and subsequent ulceration at the point of infection. Ulceration is, however, not a necessary symptom of the implantation of the syphilitic poison. The induration alone is characteristic of syphilis and is a sign of constitutional infection. Its size and extent are of no prognostic significance in reference to the further course of the disease. The induration having attained its acme remains stationary for an indefinite and often considerable period, and then very slowly disappears. Local complications are not unfrequent, the most serious of these being phagedæna, which is believed by some to be almost invariably due to syphilis.

A few days after the induration has become developed, the superficial lymphatic glands in the immediate vicinity begin to enlarge and become hard to the touch. The

swollen glands are scarcely, if at all, tender on pressure, and the skin covering them is unchanged in appearance. The enlargement takes place slowly; the tumours are round or oval, and more or less prominent according to their situation and the amount of adipose tissue by which they are surrounded. As a rule, several glands are thus affected. Suppuration rarely takes place; sometimes the lymphatic vessels between the induration and the glands become hard and swollen.

While these changes, apparently of a purely local character, are going on, the patient may for some time be unconscious of any change in his general health. In the majority of cases, however, soon after the glandular induration shows itself, more or less decided symptoms of constitutional disturbance make their appearance. The patient grows pale, feels ill in various ways, and suffers from headache and pains in the limbs, and attacks of fever. After these symptoms have lasted for a variable time, an eruption of spots or papules appears on the skin or the throat becomes sore. With the setting-in of these latter symptoms, the "constitutional" stage of syphilis is said to have commenced.

It would therefore appear that there are two incubation-periods in the early stage of syphilis, the first extending from the period of infection to the development of the induration, and the second from the formation of the latter to the appearance of the symptoms on the skin or in the throat. It may be assumed that the development of the poison is resisted by the forces of the organism, which, however, are finally overcome. These periods of incubation are analogous to those of latency, often observed in the subsequent course of the disease. Virchow has advanced the view that the blood of syphilitic patients is infected by the virus only at intervals, that this latter circulates with the blood, and is deposited in the various tissues in which it gives rise to the local symptoms, such as exanthematous eruptions, gummata, &c. Virchow says that "if this assumption be correct, there is no syphilis

unless there are symptoms. If all the latter be extinguished, the same may be affirmed of the syphilis." Virchow, however, allows that occasionally a part of the poison is retained in certain foci, especially in the lymphatic glands, whence it again reaches the circulation, and becomes the starting-point for a new self-infection and new symptoms. "There is no evidence," says Virchow, "that in syphilis the infection is continuous; on the other hand, all its history compels us to assume an eruption of new disorders by fits and starts, an intermittent infection from certain foci."

There are, however, as Zeissl points out, several objections to this theory. It fails to explain the cases in which an individual in whom syphilis is latent—that is, who presents no symptoms except, perhaps, slight glandular enlargement, is able to infect other persons. This is seen in the case of a wet-nurse who shows no other signs of syphilis than some amount of pallor of the skin and glandular induration, but who nevertheless communicates syphilis to the child she suckles. It fails also to meet the case of the man who exhibits no symptoms, but nevertheless infects his wife and the child to which she gives birth. These and other considerations appear to be fatal to Virchow's theory, and it would rather appear that the virus of syphilis effects some *persistent* alteration in the blood, the nature of the change being as undiscoverable when the symptoms are latent as when they are present in the most marked degree. It is probable that the lymphatic system is the first to be affected, and that the poison reaches the blood through the lymphatics, but we cannot suppose that these latter and their glands are the main foci of the disease, keeping in view the constant communication which takes place between the blood and the glands, and the manner in which the corpuscles of the latter structures are poured into the blood-vessels. It may, therefore, be affirmed that the blood is infected long before any cutaneous manifestation appears, and that the infection is continuous in spite of the absence of that or any other symptom.

To revert, however, to the local manifestations on the skin and mucous membrane. The most common and the mildest form of eruption is a roseolous rash, which usually shows itself about eight weeks after infection. Its development may be impeded by treatment (mercurials for the induration), and accelerated by excesses of various kinds. At this period the patient, *as a general rule,* is exempt from syphilitic affections of the bones, rupia, and tubercular or gummatous formations in various parts. Cases, however, sometimes occur in which the common order of sequence is not observed, and there are no so-called secondary phenomena, the complaint passing at once into the third stage, as evidenced by rupia, gummata, &c. A description of these cases will be found in the chapter on malignant syphilis.

The milder forms of cutaneous eruption are generally of short duration, and rapidly subside either with or without treatment. The papular forms are more severe, and are often accompanied by papular growths on mucous membranes, and at places where the skin and mucous membranes join. These flat condylomata are essentially papules of the mucous membrane, and resemble in structure the papules of the skin, but are modified by the nature of the base from which they spring and its surroundings. The papular eruptions are often extremely obstinate ; they are liable to become ulcerated, and fresh outbreaks and relapses are very frequent. They may continue to show themselves for several months, and simultaneously with these the patients generally notice that their hair becomes very thin, that their nails become dry, brittle, and otherwise changed, and that the shin-bones and the clavicles are very tender and painful, especially at night. Certain affections of the eyes, such as iritis and retinitis, are prone to occur at this period.

While these symptoms are manifesting themselves, all the lymphatic glands accessible to observation will be found to be enlarged and indurated. This change first occurs, as mentioned above, in those glands which are nearest to

the point of infection, but it gradually spreads to all the glands in the body. The enlargement keeps pace with the other symptoms, being more marked when any exacerbation takes place in the latter. The glands which are most conspicuously affected are, those in the neck, at the posterior border of the sterno-mastoid muscle and beneath the occiput, the submaxillary, the inguinal and the axillary glands. The inguinal glands, being the nearest to the ordinary point of infection, are generally those which are first affected. The enlargement extends to the glands situated internally, *e.g.* the bronchial and pelvic glands. Suppuration rarely occurs unless the patient be of a decidedly scrofulous habit. In this case the glands may attain an enormous size, become painful, and finally suppurate. Examples of this kind are seen in the neck in scrofulous patients suffering from pustular syphilitic eruptions. In the majority of cases, however, the glandular enlargement pursues a chronic course, being the most invariable and permanent symptom of constitutional syphilis. It can often be detected many years after the disease was first contracted.

The changes above described constitute what are termed the secondary symptoms of syphilis. They are characterised, for the most part, by the rapidity of their development, by their comparatively mild and superficial nature, and by the promptness with which they subside under suitable treatment. They are also characterised by a tendency to a general and symmetrical development, whereas the tertiary lesions are of a more local, restricted, and unsymmetrical character. The classification is convenient, but no sharp line of distinction can be drawn between the secondary symptoms and those which come after them. Certain lesions, such as sarcocele, would occupy a kind of intermediate position, as they do not belong to the earliest symptoms, and yet precede, as a general rule, the later manifestations, such as severe diseases of the bones and disease of internal organs.

Affections of the eye belong to both periods. Thus in

the secondary stage, iritis, retinitis, and choroiditis are observed. These affections show a great tendency to relapse, and, as time goes on, gummatous growths sometimes appear in the iris and choroid. The classification is, however, useful, because in many cases no other symptoms make their appearance. Relapses may occur, proving that the complaint is not altogether eradicated, but the recurrences appear as purely local lesions, differing in no way, save by their mildness, from those that have gone before. Thus new crops of eruptions may appear on the skin and mucous membrane, fresh attacks of angina, or of iritis, may supervene, and the glandular swellings and indurations may become more prominent from time to time. It not unfrequently happens, however, that these recurrences are of a much more serious character, and are accompanied by general symptoms similar to those which were associated with the first appearance of the eruption or the angina.

In tracing the further course of syphilis there are numerous variations to be noticed. These differences are connected with the intensity of the lesions and symptoms, and often, it would appear with some peculiarities, so to speak, of the soil in which the poisonous germ is sown, and are due to several causes. It is a well-known fact that, even apart from any differences of treatment, the course of syphilis is greatly influenced by the age, habits, and surroundings of the patient, and by the state of his general health. With regard to age, syphilis, *cæteris paribus*, is a much more serious disease in a man over forty years of age than in one who has not reached that period, and the general gravity of the disease increases with advancing years. In elderly patients the evolution of syphilis is more rapid than in younger ones, the tertiary stage is much sooner reached. The secondary eruptions soon become decidedly pustular, but this stage is cut short, for in less than a year after infection gummatous growths may become developed in the skin and elsewhere, and these undergo rapid disintegration and suppuration. The type

of the disease, therefore, varies considerably from that usually observed. The period of incubation has been noticed to be short in old people. Relapses of the tertiary cutaneous ulcerations are very frequent. A patient who contracts syphilis after forty rarely, if ever, gets rid of it, and the prognosis is unfavorable as regards the effects on the system in general. The symptoms are aggravated by excesses of all kinds, but *especially by excess in alcohol*, by exposure, and in fact by all conditions which tend to depress the system generally. A previous condition of bad health tends to influence the course of the disease in an unfavorable manner, and there are also individual peculiarities, some persons being much more seriously affected than others, in the absence of any obvious cause for the difference. There is another remarkable characteristic of syphilis, well seen in some cases, and that is, the appearance of the symptoms, under certain conditions, after a long period of latency. A patient may have been free from symptoms for several years when after exposure to cold, or indulgence in excess, or after a period of impaired health owing to reduced circumstances, the disease reappears in a much more serious form than before. Instead of papules we find pustules of varying size, some of which become converted into troublesome ulcers. A frequent concomitant is a severe form of throat-affection, an ulceration which tends to spread and to cause considerable destruction of tissue. These symptoms are attended by fever and other evidences of constitutional disturbance. The nasal cavities may be similarly affected ; the mucous membrane is destroyed by ulceration, and the process extends to the cartilages and bones of the nose. In no part of the body are the symptoms of syphilis more marked, or the result more destructive in certain cases. The bones generally, but especially those of the skull, the clavicle, and the tibia are at the same time often the seat of painful swellings.

There is yet, in a pathological point of view, another and a very important stage in the course of syphilis, and this is characterised by the formation of certain pecu-

liar local growths, termed gummatous tumours or gummata. These may occur in any organ of the body, and are sometimes diffused, and sometimes distinctly circumscribed. They are seen in their most perfect condition in the liver, where their colour distinguishes them from the structures in which they are embedded, but the skin, mucous membranes, the bones, the brain, and all the internal organs, may be the seat of these growths. They are for the most part peculiar to the later stages of syphilis, and they differ from the more superficial lesions of the earlier stages in exhibiting a slowness of evolution, a power of extension to all parts of the body, and a very decided tendency towards disintegration and molecular necrosis rather than towards spontaneous absorption and disappearance. Some believe that gummata are purely local formations and are developed from deposits left over from the stage of exanthematous eruption. In the more superficial parts, viz. in the skin and subcutaneous cellular tissue, the disintegration of the gummata often gives rise to ulceration of a very destructive character and tending to involve the adjacent parts. These ulcers sometimes take a serpiginous course, extending in one or more directions, while cicatrisation takes place at the spot where the process commenced. When these formations take place in internal organs, they often give rise to very serious symptoms. Cerebral lesions, of a fatal character, are often due to the development of gummata. Similar formations in the bones and periosteum are frequent causes of extensive caries and necrosis, which in their turn set up a marked condition of cachexia, associated with amyloid degeneration of many internal organs, and especially of the kidneys. A new train of symptoms is then presented. The urine becomes albuminous, and contains hyaline casts, dropsy sooner or later supervenes, and death eventually takes place with symptoms of uræmia. In other cases, the lungs are the organs mainly affected in the last stages of severe syphilis, and death takes place with symptoms resembling those of consumption. Death may also follow

from gummatous growths in the heart or in the liver, and in some cases scarcely any important organ escapes being invaded by these growths. All these manifestations occur, as a general rule, at a late period of the disease, seldom at a less interval than two years from the date of the primary infection, though in some cases at a much earlier period. I have seen several instances in which rupial ulceration took place within the first six months, and was soon followed by cerebral symptoms. I have reason to believe that this association of symptoms is by no means rare, and my experience would lead me to give an unfavorable prognosis, *quoad* the setting-in of cerebral symptoms, in cases in which superficial gummata, with severe ulceration, appeared within the first year after infection.

The development of gummata may be said to constitute the last stage in the course of the disease, and this stage in many cases passes through three phases before it attains its completion. In the first of these the growths are developed in the more superficial parts, as the skin and the subcutaneous connective tissue ; in the second, the tendons, muscles, bones, and the fibrous tissues are affected, while in the third, the viscera are the principal seat of the lesions. It must not be inferred, however, that this order of sequence is always adhered to, on the contrary, the fibrous tissues and the bones are often first affected, and the viscera are next invaded by the growths. The term "tertiary" was adopted by Ricord to designate affections of the bones and fibrous tissues and of the internal organs. This "tertiary" stage is called by Lancereaux the "period of gummatous products," the "secondary" stage being styled by the same author the "period of general eruption." This latter is described by Zeissl as "the stage of moist papules." He adopts Lancereaux's term for the tertiary stage.

There is another important difference between the secondary and the tertiary lesions of syphilis as regards the inoculability of the secretions from ulcers or sores. The

secretions of condylomata and of ulcerative throat affections are well known to be inoculable, but it does not appear that the secretions or discharges from gummatous growths are possessed of a similar property. A question closely akin to this, refers to the hereditary transmissibility of the disease when in the tertiary stage. This question will be discussed in the chapter on hereditary syphilis.

The principal stages in the course of the disease may be therefore stated as follows :

1. The stage of incubation.
2. The local affection.
3. The general eruption, or period of secondary affections.
4. The stage of gummatous formations and ulcerations, or stage of tertiary affections.

Syphilis has been compared with the exanthemata, and in some respects the comparison holds good, but it must not be pushed too far. The secondary period corresponds with the eruptive stage of the infectious fevers, and the tertiary period to the sequelæ sometimes observed, and which, though no essential part of the primary disease, are due for the most part to the weakened condition of the organs implicated and to the impure state of the blood induced by the poison which gave rise to the fever. In the exanthematic fevers, however, the poison is rapidly eliminated, and after a definite time the patient is free from all germs of the disease, the only difference being that, as a general rule, his system is no longer susceptible of being influenced by exposure to the particular fever poison. In syphilis the elimination is a much more gradual process, having no limit as regards time, and in many cases never being completed. Relapses are, moreover, frequently observed, and there is another great difference between syphilis and infectious fevers, in that the course of the former is *indubitably influenced by treatment*, whereas no claim of the kind can be made for medicines in the case of fevers.

The possibility of recovery from syphilis, disputed by many, cannot be denied, and by recovery is meant not merely the disappearance of this or that symptom, but the real cessation of the disease, consequent upon the destruction and elimination of the poison. As stated above it is impossible to determine the duration of syphilis ; in some cases, after a few months, the patient remains free from any trace of the disease for the remainder of his life ; in others, the same result is not attained until years have elapsed. Proof that the poison can be totally eliminated is found in the fact that reinfection occurs in not a very small proportion of cases. Examples of this will be described in a subsequent chapter, and they show that syphilis does not differ from other constitutional diseases which can be eradicated by the combined influences of time, hygiene, and treatment.

It is difficult to form any estimate of the mortality due to syphilis, but it is doubtless much higher than is commonly supposed. The disease is often the real cause of many affections which at last terminate fatally, and in many cases its presence gives to disorders a fatal turn, which they would otherwise have escaped. (See page 13.) Syphilis, however, may be the immediate cause of death, as in cases where gangrene or sloughing attacks syphilitic sores, or where necrosis of the cranial bones causes perforation of a venous sinus, or where syphilitic laryngeal disease produces suffocation, or where disease of the cerebral arteries or a gummatous growth is the cause of fatal coma. It far more commonly happens, however, that syphilis gives rise to chronic visceral lesions which interfere with the functions of important organs, and set up a condition of cachexia which ultimately proves fatal. Zeissl states that in one year in the Vienna General Hospital there were 1097 patients treated for constitutional syphilis, 667 men and 430 women. Of these, six men and two women died, the mortality was therefore ·7 per cent. The causes of death were pulmonary tuberculosis and renal disease, and, in the case of one woman, septic perimetritis. The mor-

tality in subsequent years was found to approximate very closely to the above figures. My experience is in accordance with that of Lancereaux, who states that even in the absence of any epidemic, visceral syphilis is frequently complicated with erysipelas, often of a serious and even fatal kind. In like manner the subjects of visceral syphilis are especially liable to pneumonia of an insidious character. It is well to bear in mind Lancereaux's advice that whenever one or other of these affections occurs in a patient who is enfeebled and cachectic without obvious cause, the physician should think of the possible existence of visceral syphilis.

CHAPTER IV

THE NATURE AND CAUSE OF SYPHILIS

It was stated at the conclusion of the first chapter that the separation by Bassereau, in 1852, of primary venereal sores into two classes, named respectively the hard and the soft, formed an important landmark in the history of syphilis, and a starting-point for several theories with regard to its nature. Before this time it was pretty generally supposed that all venereal sores were due to the action of a single virus, of an unknown nature, but the fact had not escaped observation that while in some cases the sores were followed by more or less severe constitutional symptoms, in others no such results could be detected, the local ulcer constituting the whole of the complaint. The difference in the appearances of the two sores was supposed to be due to difference in the virulence of the poison and to peculiarities in the system in which the virus had become implanted.

Bassereau's theory was based mainly upon the "confrontation" of persons suffering from venereal sores with those from whom they had contracted them. From an examination of hundreds of cases, he was able to prove, to his own satisfaction, that the hard sore always produced a similar lesion, and that the same held good of the soft sore, *i.e.* that each possessed only the power of producing its like. He also established the difference between the sores, as regards liability to be followed by constitutional symptoms. He further observed that the soft sore was frequently accompanied by inflammation and suppuration of the nearest lymphatic glands, whereas

the hard sore caused the glands in the neighbourhood to become swollen and hard, but very rarely to suppurate.

These views were further developed by Rollet, of Lyons, who endeavoured to bring them into harmony with certain clinical facts. It was well known that by repeated inoculations the soft sore could be reproduced almost *ad infinitum* upon the bearer of it, and upon all other persons, whether syphilitic or not. It was also known that the secretion from the hard sore was inoculable upon all non-syphilitic individuals. It had been likewise discovered that this latter secretion could not be inoculated successfully upon the person from whom it was taken or upon any other individual already syphilitic. If, however, several hard sores appeared simultaneously on the same patient, it was assumed that these were due to simultaneous inoculation at more points than one, and were not the results of successive infections from an original focus. It was subsequently discovered that the secretion from the hard sore could sometimes be inoculated upon the bearer, but that the resulting lesion did not resemble the parent one, but was similar in all respects to a soft sore. Bassereau had not attempted to explain the cause of the difference between the two sores, or to assume the existence of a specific virus for the local sore. He simply stated that he was constrained to admit a different cause for the local and constitutional diseases. Rollet, on the other hand, asserted that the soft sore possesses a *distinct virus* of its own, differing entirely from that of the hard sore. His doctrines, on these points, constitute what is termed the *Duality Theory*.

These views, however, of Rollet, appeared to be contradicted by the results of inoculating the secretions of a hard sore upon the bearer. As stated above ulcers were produced, without any period of incubation, exactly resembling soft sores in appearance, and repeatedly inoculable upon the patient and other persons. These experiments seemed to establish the identity of the secretions of the two sores, and consequently to upset the

Duality theory. To meet these objections, a new theory was devised, according to which a mixed character was imputed to certain sores, that is to say, they were supposed to contain the specific poisonous properties of both classes of sores. This theory, however, could not be maintained in face of the manifold experiments which were constantly being made. It was demonstrated over and over again that the secretion of the hard sore, after it had been irritated, could be inoculated on the bearer and produced soft ulcers, and it was impossible to assume that the supposed "specific poison" of the soft sore was present in all these cases and controlling the results. The doctrine of "duality" and that of the "mixed chancre" seemed, therefore, perfectly untenable. Another theory was to the effect that the soft sore was the product of a hard sore inoculated upon a person already syphilitic, that it had permanently lost its infective properties, and could be transmitted as a soft sore to a healthy person and not cause general infection. This theory was invented by Clerc; he used the term *chancroid* to designate the soft sore, which he regarded as the hybrid of syphilis.

An extensive series of experiments was performed in 1853 by Danielssen of Bergen. His patients were lepers, and his idea was that, inasmuch as there is a probable connection between leprosy and syphilis, it might be possible to cure the former by inducing an attack of the latter disease. He inoculated twenty-seven lepers, none of whom had suffered from syphilis, with pus from suppurating chancres. The inoculations were continued for many months, but not one of the patients showed any sign of constitutional infection. In order to prevent the conclusion that lepers are not liable to constitutional syphilis, Danielssen afterwards inoculated one of the above-mentioned patients with matter from a hard sore. In three days a characteristic pustule became developed, and the inoculations were continued with the pus which this yielded. Only a few small pustules, however, were produced. Nearly two months afterwards one of the

scars, the results of the previous inoculation, broke open and an ulcer formed, which yielded a thin and scanty secretion. The parts around were red, hard, and somewhat tender, and the inguinal glands on the same side became hard and swollen. The ulcer healed, leaving a somewhat hard cicatrix. Rather more than three months after the inoculation, constitutional symptoms became developed. These experiments appear to prove that both the hard and the soft chancres propagate themselves after their kind, and that the general infection is not to be attributed to any peculiar predisposition, or to diathetic or other conditions.

With regard to the secondary manifestations of syphilis, Hunter, as is well known, denied that they possessed contagious properties. He also asserted that the disease was not hereditarily transmissible. Ricord also for some time denied the contagious properties of discharges from secondary sores, relying upon experiments performed upon diseased persons; but he afterwards retracted this view, and assisted in establishing the contagious nature of secondary lesions. He also fully assented to Bassereau's theory of two kinds of ulcers representing two perfectly separate and distinct diseases. Rollet had pointed out that the sores obtained by inoculating the discharges of secondary syphilitic eruptions were invariably hard.

At the present day there are two principal theories with regard to the relations existing between the hard and the soft sores. These may briefly be described as the Unity Theory and the Duality Theory, and it is desirable to examine them somewhat closely. The Unity Theory teaches that the hard and the soft sore are the products of one and the same virus; it admits that the infective property (constitutionally) of the soft chancre is perhaps less than that of the hard sore, but claims that the former may, and frequently does, produce constitutional effects under favorable circumstances and on a suitable soil, and that the modification of the results may be due to the nature of the local process which is

induced. It further asserts that it is unsafe to predict that even a soft chancre with a suppurating bubo will not be followed by constitutional symptoms.

The principal statements upon which the Unity Theory is founded are thus formulated by Kaposi, of Vienna, one of its most steadfast adherents.*

1. The soft chancre, with or without suppurating bubo, ends generally as a local disease, and is not usually followed by constitutional disorder of any kind.

2. The same kind of chancre, with or without suppurating bubo, is sometimes followed by constitutional syphilis.

3. The soft chancre may begin as such, but becomes indurated in its subsequent course, and is followed by general syphilis.

4. The hard chancre begins, in the majority of cases, like the soft one (as a pustule, without incubation); the induration becomes developed in the course of the second or third week, but sometimes earlier, even before the end of the first week. This, as a general rule, is followed by constitutional syphilis.

5. The chancre exhibits typical induration, but in very rare, though well authenticated cases, is not followed by constitutional syphilis.

6. If the typical sclerosis be removed at an early period by excision or other method, in numerous instances, though not in all, the patients will escape constitutional manifestations. (As will be seen hereafter, the author has reason to doubt the correctness of this statement. He believes that the induration is a sign of constitutional infection.)

7. Soft chancres and pustules may pass into characteristic papules *in situ*. The number of these may keep on increasing by auto-inoculation, as the chancre itself, as a local affection. After an interval of from six weeks to three months, roseola appears as a manifestation of general infection, and this is followed by a series of constitutional syphilitic symptoms.

* 'Pathologie und Therapie der Syphilis,' S. 29.

8. Several indurations may occur simultaneously on one individual, or may become successively developed.

9. The purulent secretion obtained by artificially irritating Hunter's nodules and papules, or yielded spontaneously by these, produces ulcers on inoculation, and these are repeatedly inoculable and correspond therefore in this respect with the general notion of a soft chancre.

10. The inoculation upon a healthy subject of the secretion from a soft sore (resulting from the inoculation of a hard sore upon the patient or upon another syphilitic subject), is not invariably followed by constitutional syphilis.

11. The artificial inoculations of the secretions of secondary syphilitic products, or of the blood of syphilitic patients, have shown that in these cases the primary effect develops itself for the most part not in the form of a chancre, or of the Hunterian induration, but in the form of a nodule resembling a papule in which the characters of sclerosis are absent.

12. Clinical experience also teaches that, in numberless cases, constitutional syphilis is directly conveyed in the form only of papules, the so-called broad condylomata, without sclerosis or a form of chancre as a primary effect.

13. In addition to this, constitutional syphilis very often follows primary affections, which correspond to the characters neither of the typical soft sore, of the typical hard one, of the sclerosis, nor to those of the papule, but appear as phagedænic or diphtheritic ulcers, or even as mere erosions. Thus, then, the dogma that all syphilis has an indurated chancre, or a sclerosis, or a papule, as its initial form is contradicted.

14. Finally, well-authenticated cases occur in which syphilis is acquired without any trace of what may be called a primary effect, there being no visible formation of ulcer or papule at the spot where the contagium is introduced—*Syphilis d'emblée.*

The Duality Theory teaches that there are two varieties of chancres, the soft and the hard. The former of

these runs an acute course, its edges and base are soft, or, at all events, non-indurated, and its effects are local only, that is, it does not contaminate the system. The latter is chronic in its course, has indurated edges and base, and is invariably followed by symptoms of constitutional infection.

The facts upon which this theory is based may be thus briefly recapitulated. Inoculation with the pus of a soft venereal ulcer gives rise to a pustule, and after three or four days to a characteristic ulcer. Inoculation with the secretion from a hard venereal sore produces an induration which makes its appearance during the third or fourth week or even later. The infecting chancre has therefore a much longer period of incubation than the soft sore, the ulcer in the former kind is less excavated, its secretion is less abundant and thinner in character; ulceration is, indeed, often absent, a subcutaneous indurated nodule being the first manifestation. The hard chancre occurs on the human subject only, not in animals; these latter can be successfully inoculated with the secretions of the soft sore. It would appear, however, that syphilis can be communicated to monkeys by inoculation. The soft chancre may run its course without the formation of a bubo, the hard chancre is always associated with swelling and induration of several lymphatic glands. If glandular swelling occurs in connection with a soft chancre, suppuration takes place, and the pus, if inoculated, produces a simple ulcer. The soft chancre may be repeatedly inoculated upon the subject of it: up to within a few years ago the proposition that an indurated sore is non-inoculable upon the patient was held to be incontestable. As mentioned above, the indurated sore, after irritation, yields a secretion inoculable upon the bearer and other syphilitic individuals, and producing a sore exactly resembling a soft chancre. The buboes associated with the hard sore very rarely suppurate, and when suppuration does occur inoculation with the pus so formed never produces soft sores. The infecting sore occurs for the most part as a solitary

lesion, or if more than one be present, the number is always very small; there is no limit to the number of soft sores which may be found in the same patient. The poison of the infective chancre is connected with débris of tissue, the blood and the seminal fluid of the patient; that of the soft sore is contained only in the pus or in the débris of the ulcer. The infecting chancre may also be communicated from broad condylomata. A wet-nurse, for example, infected by a syphilitic child always exhibits the first signs of the disease in the form of an infecting chancre or a broad condyloma; the same thing is observed in the cases where the disease is communicated from the mucous membrane of the mouth. Inoculation of the secretion of a hard sore upon healthy subjects has invariably given rise to the development of a similar lesion and of no other. Daniellsen and Boeck inoculated lepers with the pus of simple venereal ulcers, and the patients showed no symptoms of general syphilis; they then used the secretion of a hard chancre and general syphilis followed.

One objection to the Duality Theory is supposed to be constituted by the fact that an ulcer often exhibits all the characteristics of a soft sore for many days or even weeks, and becomes indurated later on, and is followed by constitutional symptoms. Such an occurrence, however, may be explained in one of three ways. (1) A patient suffering from secondary syphilis, but whose genital organs are free from obvious lesion, contracts a soft sore; this can be inoculated as such upon the bearer or upon a healthy individual. If, however, the secretion from such a sore contain an admixture of the patient's blood, and be then inoculated on a healthy subject, the result will be the production of a hard sore and its consequences. (2) A soft sore may occur in close proximity to an infecting one, and the two secretions may become blended. The result of inoculation upon a healthy subject in such a case may be either a hard or a soft sore, or the latter followed by the former. (3) Under the circumstances mentioned above, a patient

is inoculated with the mixed secretions and the result is a compound one. After a brief incubation, perhaps on the third day, a pustule with an ulcerated base, *i.e.* a soft sore, forms on the skin. After an interval of three or more weeks induration appears, and the sore is then a hard one, or, in other cases, the cicatrix becomes indurated after the sore has healed. These explanations are supported by many observations in regard to vaccination. If the vaccine-lymph, taken from a syphilitic child, be free from admixture of blood, the vaccine vesicle runs its course in the ordinary way and no ill results follow, but if such admixture be present, the vesicle becomes developed, and after it has run its course, induration appears in its base, and is followed by general symptoms. This process is exactly analogous to that seen in the case of a soft sore, which, some time after its appearance, exhibits signs of induration.

Other objections to the Duality Theory are that syphilis sometimes occurs without previous or coexistent induration of the cicatrix; it has been also noticed that a woman may infect several men, and give one a hard and the other a soft chancre. Besides this, it not unfrequently happens that an individual who has exhibited induration several years previously again contracts an infecting chancre. This, however, only proves that a patient may become cured of syphilis, and that a second infection is possible, as will be fully described in a subsequent chapter. There is no clinically characteristic sign whereby a so-called tertiary syphilitic ulcer can be distinguished from a soft chancre; there are forms of the soft ulcers and of papules which exactly resemble each other. Cases occur in which the hard sore is not followed by general syphilis; several hard chancres are sometimes found on the same individual; syphilis may be conveyed to an individual without the development of any local affection (*Syphilis d'emblée*). The hardness of the ulcer is not an exclusive attribute of the infecting chancre, there must be at the same time firm nodular induration

of the lymphatic glands. It is also asserted that during repeated inoculation of chancres upon different individuals sometimes a soft and sometimes a hard chancre is developed, and that these variations are intimately connected with the constitution of the individual.

The supporters of the Unity Theory regard every chancre, whether its base be hard or soft, as connected with syphilis. According to this view, the pus of a soft chancre represents a concentrated poison giving rise to a more acute process, which, by the destruction it sets up, prevents general infection, whereas the secretion of the hard chancre produces a chronic poisoning of the blood, the effects of which are gradually and slowly developed.

The supporters, however, of the Duality Theory allow that sometimes (but only in exceptional cases) soft sores are followed by constitutional syphilis. But in these cases the explanation is that the soft sore has simply been the means of conveying the syphilitic virus, and has not given rise to the affection, because it possesses specific or peculiar qualities, either before cicatrisation or only after that process has taken place. In addition to this, there is the possibility in such cases that papules may exist under the ulcer and the syphilis may be due to them, while they have no effect upon the condition of the floor of the ulcer, and accordingly there is no feeling of induration communicated to the finger. The advocates of the Duality Theory admit that inoculations, upon the subject of it, with the secretions of the hard chancre give rise to a lesion similar to the soft chancre, and that if a healthy person be inoculated from the lesion so produced, a hard chancre may be the result.

If a short *résumé* be made of the present position of the Unity and Duality theories it will appear that the adherents of both views are agreed that the course of the hard chancre is different from that of the soft one, and that, with a few exceptions, the former is followed by

constitutional syphilis; they also agree that the soft chancre, as a general rule, remains a local affection, that at the worst it leads to suppuration of the inguinal glands, and that, without any previous induration of its base, it may be followed by constitutional syphilis, but that such a result is extremely rare. It is, however, assumed by the advocates of the unity of the contagia that the soft chancre gives rise to the infection by virtue of the poison lodged within it, whereas the advocates of the duality allow that the sore is only a channel through which the general infection may take place.

In addition to these two theories there is a third, which, in the opinion of the author, satisfactorily accounts for the differences between the two classes of sores. It may be laid down as an axiom that the secretions of the hard sore contain a specific virus, capable of producing definite affects when inoculated upon non-syphilitic individuals. On the other hand, it may be asked, Is there any *peculiar virus* in the secretions of the soft sore, and is a sore of this character *necessarily connected* with venereal disease? The answer to these questions must be in the negative, inasmuch as experiments have proved that ulcers exactly resembling soft sores can be produced on non-syphilitic individuals by the inoculation of non-specific pus.

The first experiments of this kind were made by Prof. Pick in 1865. He inoculated syphilitic subjects with the pus from non-venereal pustules (scabies, acne, and pemphigus) and produced pustules and soft sores inoculable through several generations.* Inoculations upon the patients from whom the pus was taken and upon healthy persons produced no effect. It was considered that the effect produced depended upon the increased vulnerability of the syphilitic subjects, that is to say, these latter were supposed to possess a peculiar aptitude for the development of cutaneous inflammation and ulceration. Further

* Zeissl, 'Lehrbuch der Syphilis,' Vierter Aufl., S. 202.

experiments have, however, proved that similar inoculation on non-syphilitic subjects may be followed by ulcers resembling soft sores. The theory of the "increased vulnerability" of syphilitic subjects is therefore unnecessary to account for the phenomena.

Some experiments performed in Vienna by Dr Wigglesworth, of Boston, U.S., clearly show that the inoculation of non-specific pus may, under favorable circumstances, give rise to local ulcers, closely resembling soft sores, and re-inoculable in generations, and that this pus need not come from a syphilitic person, or be inoculated on a syphilitic person, in order to produce these effects. It is, however, probable that the effects would be more marked if the pus were taken from or inoculated upon a person enfeebled by any such disease as syphilis.

Dr Wigglesworth's experiments were performed upon himself. He was free, he states, from all disease, either hereditary or acquired, but was in somewhat feeble health owing to overwork in the hospital. He took pus from an acne pustule upon himself and inoculated three spots on the anterior aspect of his left forearm. The result, in three or four days, was three well-marked pustules. From each of these he inoculated one new spot upon the same arm nearer the wrist, and produced three new well-marked pustules. From each of the three second series he again inoculated fresh spots, still nearer the wrist, and with the same results. "The second series was hardly as well marked as the first, and the third series was slightly inferior in vigour to the second, still all were well marked, the nine sores being at the same time present on my arm. On removal of the crusts, perceptible ulceration of the skin was found to exist. Zeissl, with whom I was studying at the time (1867-68), happened to be lecturing upon Dualism, and requested me to show my arm to the class to prove the production of ulceration from properly inoculated, simple, healthy pus. There were no buboes in my case, nor did the ulceration require other treatment than exclusion from

the air by means of a simple dressing and cleanliness. The scars remain to the present day."*

Kaposi likewise has performed experiments of the same nature, and which point to the same conclusion. Dr R. W. Taylor describes a case of a syphilitic man who contracted gonorrhœa and subsequently developed herpes vesicles, which in a few days were converted into typical chancroidal ulcers. The secretions from these latter were inoculated upon the patient's abdomen, when a characteristic chancroid was developed. Other sores of the same character made their appearance on his left thigh in consequence of his careless and dirty habits, and finally intercourse with his wife resulted in her having several chancroids and suppurating buboes.

It would therefore appear certain that *the inoculation of the products of inflammation will often produce a sore identical in kind with soft ulcers,* the result of impure sexual intercourse, and this being allowed, it may well be asked what reason is there for assuming the existence of a virus, *having specific characters,* as requisite for the production of a soft sore? Why should it not arise *de novo,* and without the intervention of the syphilitic virus? It must also be borne in mind that the infecting source often contains an admixture of many secretions, and it is not to be expected that ulcerative lesions, the result of sexual intercourse, should invariably preserve and exhibit the pure and simple characters to be found in sores produced by experimental inoculations. The vagina often contains morbid secretions from its own mucous membrane and from that of the uterus, and it is easy to conceive that these secretions, inoculated upon the male organ, should be able to give rise to inflammation and ulceration without any syphilitic virus being present. In this way, therefore, *the soft sore is separated altogether from syphilis.* The case was similar some years ago with regard to gonorrhœa. Formerly believed to be identical with syphi-

* Bumstead and Taylor, 'Pathology and Treatment of Venereal Diseases,' p. 29; Zeissl, 'Lehrbuch der Syphilis,' S. 204.

lis, it is now known to have nothing to do with that complaint, and not unfrequently to originate *de novo, i.e.* independently of direct contagion.

The author's views with regard to syphilis and its relation to the soft venereal ulcer may be thus formulated :

1. The disease known as syphilis is due to the action of a specific virus, a pathological agent, separate and distinct from every other animal poison, and never originating *de novo*.

2. The soft venereal ulcer (pseudo-syphilis) is due to the action of irritating secretions, which, so far from being identical with the poison of syphilis, are altogether different and distinct from it. Such an ulcer may, and frequently does, arise *de novo* from inoculation of the products of inflammation, and may then be transmitted from one individual to another.

3. The virus of syphilis may be commingled with the secretions of a pseudo-syphilitic sore, or with secretions which by themselves would cause such a sore. In either case the resulting ulceration would possess double properties, evidences of which would sooner or later be exhibited.

With regard to the *nature* of the syphilitic virus, it must be confessed that we know as little of it as we do of the contagious principle of smallpox, measles, or scarlet fever. All that is certain is that the *materies morbi* of syphilis reproduces itself in the infected individual, that it can be conveyed by inoculation to healthy persons, and also to the *fœtus in utero* at the time of impregnation and through the placental circulation.

The contagium of syphilis has been supposed to consist of a specific fungus (vibriones and bacteria), and the symptoms of the disease have been thought to be due to the action, akin to fermentation, set up by these fungi. Micrococci and bacteria of an apparently similar character have, however, been discovered in the blood of animals, and it would therefore appear that these organisms have no necessary connection with syphilis.

In the year 1870 Dr Lostorfer, of Vienna, asserted that the blood of syphilitic persons contains certain peculiar bright bodies, which become developed in it in from one to five days after it has been taken from the patient. The method he adopted was to take a drop of blood, obtained by puncturing the skin, and transfer it to a smooth slide and cover it with a piece of thin glass. The slide was then placed in a moist chamber. As a general rule, during the first two days nothing of a foreign nature was to be seen except vibriones and bacteria, but on the third, fourth, or fifth day small bright bodies, some at rest and others presenting vibratile movements, made their appearance. These increased in number and size, and exhibited processes and bud-formation. Some of the corpuscles were circular, others irregular in form. After eight or ten days a vacuole formed in each of the larger corpuscles, and this appeared to be the final stage. As many as fifty were at one time seen in the field of the microscope. Dr Lostorfer asserted that in no specimen of blood from a non-syphilitic person could he find any of the above-described corpuscles, and he therefore considered that these bodies were characteristic of syphilis. Other observers, however, Stricker among the number, have discovered the same appearances in the blood of healthy persons, and also in that of persons suffering from cancer, tubercle, and chronic nephritis. It is asserted that the vacuoles are the same as those found in the sarcode of infusoria and in many vegetable cells. Other observers have noticed them in the red corpuscles, as well as in the colourless cells, and even in the blood-plasma, and regard them as minute drops of water surrounded by a very thin layer of albumen.

It may be fairly assumed that the effects of syphilis are due to the action of a *contagium vivum*, consisting of infinitely minute particles of matter. Dr Beale regards the syphilitic poison, or virus, or contagium, as consisting of a "minute bioplast, which, like many other forms of morbid bioplasm when introduced into an organism whose

nutrient fluids are in a favorable condition, grows and multiplies. The whole system may be infected, and various local and general diseases may be the consequence. Such is the persistent tenacity of the bioplasm that it may live and grow for many years. Dormant, perhaps, for so long a time as to lead us to believe that it has been thoroughly destroyed and eradicated, it often bursts into new growth when least expected, and after its invasion had been forgotten. . . . From the resemblance of the syphilitic bioplasts to lymph-corpuscles, syphilitic growths, like tubercles, have of course been pronounced to belong to the lymphatic category; but though, no doubt, in this class of pathological changes, as in many more, lymphatics and lymph-corpuscles are involved, our knowledge does not justify us at present in regarding syphilis as a disease especially of the lymphatic system. The syphilitic bioplast has been looked upon as a sporule, microzyme, or minute fungus-germ, but it is not of this nature. . . . The syphilitic growth is due not to the presence of fungi or other bioplasts *in* the old epithelial cells, but to the changes resulting from the growth and multiplication of the syphilitic germ-particles in and amongst the bioplasts at a time when they were in an early stage of growth."*

Cornil thinks that the infecting body is a particle of normal protoplasm which has undergone degeneration, and has acquired the properties of rapid proliferation, and of impressing its own peculiarities upon germinal matter wherever it comes into contact with it. The cells of syphilis, therefore, affect chiefly the white lymph- and blood-corpuscles, which they contaminate and cause to take on rapid growth, arresting the former in their development into red blood-cells, and producing the so-called syphilitic anæmia or leucocythæmia. "These cells are to be found at the point of syphilitic inoculation, and by their proliferation and accumulation constitute the induration of the infecting chancre. The characteristic hardness of this

* 'The Microscope in Medicine,' page 466.

sore is due to the crowding together of these cells; its dryness, to their involvement of the walls of the vessels, preventing transudation of serum; its abrupt limitation, to the absence of any true inflammatory exudation, shading off into the neighbouring tissues; its superficial scaliness, abrasion, or ulceration, to the degree of its interference by pressure with the blood-supply to the epidermic layer of the skin." Cornil believes that the syphilitic poison, whatever be its character, gains access to the general circulation *chiefly* if not entirely by the lymphatics, and he explains many of the local phenomena by assuming a condition of "lymphatic obstruction" due to the continuous irritation or inflammation set up by the syphilitic virus. Other observers, among them Küss of Strasburg, and Drs Bumstead and Taylor, are inclined to believe that syphilis is essentially a disease of the connective tissue, and to regard the blood rather than the lymphatics as the vehicle of contagion. Other theories have been advanced, but they are not more probable than those already mentioned. All speculation on the essential nature of the syphilitic virus must be more or less indefinite until the virus itself has been isolated either by chemical or anatomical tests.

CHAPTER V

VEHICLES OF THE SYPHILITIC POISON AND THE MODES OF ITS COMMUNICATION—SYPHILIS AND VACCINATION

The contagium of syphilis is contained in the débris of tissue resulting from the disintegration or suppuration of certain syphilitic growths or sores; it is most abundant in the discharge from a moist syphilitic papule and in that of an infecting sore. Pus obtained from a non-syphilitic eruption in a syphilitic patient does not necessarily contain the germs of syphilis, and the same holds good of an eczematous secretion in such a patient, and of vaccine lymph, unmixed with blood, from a similar source. The blood and the seminal fluid of patients suffering from secondary syphilis generally contain the germs of the disease. Inoculation, however, with the blood sometimes succeeds and sometimes fails. Syphilis has been known to be conveyed from one patient to another by the operation of skin-grafting; a case of this kind has been lately recorded.* In former days, when dental transplantation was practised, syphilis was not unfrequently conveyed with the tooth. Cases of this kind are mentioned by Hunter.

It is doubtful whether syphilis can be conveyed to a child through the milk of a syphilitic nurse whose nipples are perfectly free from any local affection, but a few cases seem to show that such transmission is not impossible. If erosions or moist papules be present on the nurse's nipples, infection is sure to follow. A similar question has reference to the saliva of a syphilitic subject. If this contain

* 'Annales de Dermatologie et de Syphiligraphie,' tom. iii, 1882, p. 129.

the débris of syphilitic sores on the lips, tongue, or any part of the mouth or throat, it may convey syphilis to a healthy person. There are cases on record in which the operation of tattooing resulted in the transmission of syphilis. A professional tattooer moistened his pigments and needles by placing them in his mouth, in and around which were syphilitic ulcers. With regard also to the catarrhal secretions of other mucous membranes of syphilitic subjects, they will give rise to the disease only if they contain the débris of syphilitic sores or growths.

The vehicles of the syphilitic virus are, therefore: 1. The discharges from the ulcerated induration. 2. The discharges from mucous papules and other secondary syphilitic manifestations. 3. In some cases the blood of patients suffering from secondary syphilis. 4. Physiological secretions, if they contain the débris of syphilitic ulceration. It would appear that pathological secretions not directly belonging to syphilis, do not, as a general rule, contain the syphilitic virus. 5. The semen of a syphilitic father is a vehicle for syphilis in the child he begets. The subject of hereditary syphilis will be discussed at length in a special chapter.

The Modes in which Syphilis may be communicated

There are three ways in which syphilis may be communicated. 1. Its virus may be brought into contact with the healthy body, gaining access to the system either beneath the epidermis or beneath the epithelium. Syphilis is then said to be "acquired." 2. It may be transmitted through one or both parents by inheritance. 3. The mother may acquire the disease through an infected fœtus. In the acquired form of the disease the poison may be conveyed either directly or indirectly. Direct communication during sexual intercourse is the most common way in which the disease is conveyed. The genital organs are therefore the most frequent seat of

infection (in 91 per cent. of all cases). Very slight and superficial detachment of the epidermis or epithelium suffices to permit the virus to gain access to the system. If cracks or erosions be present, absorption is of course facilitated. The poison is not unfrequently conveyed to the mucous membrane of the lips, in kissing, by a person suffering from secondary affections of the mouth and throat. The lips are the seat of infection in about 3 per cent. of all cases. Other parts of the face and the tongue are sometimes infected in a similar manner. Infection from tooth-transplantation and from skin-grafting has been already referred to. Frequent instances of direct infection are seen in the cases of nurses infected by suckling syphilitic children, and in cases of children suckled by women with syphilitic lesions of the nipples. Medical men and midwives sometimes become inoculated with the virus, when attending women suffering from primary or secondary sores. Infants in such cases are sometimes directly infected during parturition.

Syphilis may likewise be acquired indirectly, and the mucous membrane of the mouth is the part most often affected in examples of this nature. Thus the secretions from the mouth of a person affected with syphilitic lesions of that part may adhere to drinking utensils, tobacco-pipes, and other articles used by several persons in common, and may thus convey the disease. Instances of this kind have occurred in glass-factories, where one blowpipe is used by several workmen, and passed from mouth to mouth. The conveyance of syphilis in the operation of tattooing, already referred to (see p. 48), is an example of this kind. Surgical instruments, such as cupping-lancets, tongue-spatulæ, and the Eustachian catheters, have been the means of conveying the disease. Among Jews and Mahometans the operation of circumcision is sometimes followed by general syphilis, the poison being conveyed by the instrument, or else by the mouth of the person who sucks the wound.

With regard to syphilitic infection in general, it may

be stated that the bodies of all healthy (*i.e.* non-syphilitic) persons offer an equally favorable soil for the reception of the poison. No healthy person exhibits immunity from the disease, if the virus be properly inoculated; all are alike liable, irrespective of age, constitution, or temperament. It would appear probable that the subjects of hereditary syphilis are to a certain extent protected, and that the acquired disease assumes in them a milder form. Syphilitic re-infection may occur—that is, a person may acquire the disease and go through many of its stages, and then some time afterwards, after exposure to contagion, may acquire the disease anew. This important subject will, however, be discussed in a subsequent chapter.

There is, lastly, one other source of infection, viz., vaccination, which, from its importance, deserves a lengthened consideration, and to which a special section will be devoted. Inherited syphilis will be treated of in a separate chapter.

Syphilis and Vaccination

The question as to whether the syphilitic virus can be conveyed to a healthy child with the lymph used in ordinary vaccination has now been decided in the affirmative. It has been clearly shown that syphilis and cow-pox can be transmitted simultaneously from one person to another. Since the early part of this century numerous cases have been reported of children becoming syphilitic after vaccination; indurated ulcers appearing at the spots where the lymph was inserted, and being followed by more or less severe secondary manifestations. In many of the cases the disease was transmitted to the mothers or nurses of the infected children. Cases of the transmission of syphilis by means of vaccination have been reported from almost every country in Europe, and the literature of this subject is now very copious.

A consideration of these cases shows that when several children are vaccinated with lymph taken from a syphilitic

child, a certain proportion almost invariably escape, but that the majority become infected. In those who escape contamination, the vaccination may either fail altogether or may follow the normal course. In those who are infected, there may be no characteristic vaccine vesicle, but, three or four weeks after the vaccination, an indurated nodule or an indurated ulcer appears at the spot to which the lancet has been applied. In another class of cases, the vaccine vesicle appears in due course, dries up, or bursts and cicatrises, and is followed in from four to eight weeks by the development of induration and ulceration.

With regard to those instances in which several children have been vaccinated directly from the same source, and some have become syphilitic while others have escaped, the question naturally arises as to how the difference can be accounted for. Another peculiarity has also been observed. When syphilis has thus been transmitted, it has sometimes happened that only one of the punctures has given rise to induration and ulceration. The majority of these cases can be explained by supposing that the virus of syphilis is contained not in the vaccine lymph, but in the blood which is sometimes mixed with the latter when the operation is carelessly performed. When many infants are vaccinated from the same source, it may easily happen that the operator, in his endeavour to obtain sufficient lymph, passes his lancet too deeply into the vesicles and causes blood to escape. Supposing the source to be contaminated, the children vaccinated with the mixture of lymph and blood will become infected, while those vaccinated with pure lymph will escape. The same hypothesis will serve to explain the difference between the punctures in the same child. In experiments in which healthy persons were inoculated with lymph carefully taken from vaccine vesicles developed in syphilitic subjects, no ill results followed. On the other hand, when healthy individuals have been inoculated with blood taken from syphilitic patients, the results have been more often negative than otherwise. It would, therefore, seem that

something more than blood is *generally* requisite as a vehicle for the transmission of the virus.

It has been pointed out by Zeissl and others that persons, whether infants or adults, affected with constitutional syphilis, are peculiarly prone to the development of ulcers when inoculated with the contents of a pustular or vesicular eruption. The vesicle produced by vaccinating a syphilitic infant may be in reality the primary stage of an ulcer, the secretion or débris of which contains the syphilitic virus. A healthy child, vaccinated from such a vesicle, in all probability becomes syphilitic ; no characteristic vaccine vesicle is developed, but some weeks after the operation, induration and ulceration make their appearance.

The course of transmission is sometimes reversed. Thus the child supplying the lymph may be healthy, and may be infected by the lancet used in puncturing or scarifying the arm of a syphilitic child. In this case the blood is the vehicle which transmits the poison. Another accident may possibly arise. When several persons, one of whom is syphilitic, are vaccinated directly from the same infant, not only the latter but certain of the other individuals may become infected, if only one lancet be used and not carefully cleansed after each vaccination.

The fact, already alluded to, that syphilitic infants are especially prone to the development of ulcers under the influence of irritants, has an important bearing upon those cases in which syphilis is alleged to have been conveyed by vaccination. While fully admitting the possibility and frequent occurrence of this mode of infection, it is certain that in many of the cases which have been reported the vaccination simply caused syphilitic symptoms to appear in infants who had inherited the disease, but who had not previously exhibited any obvious manifestations. If the eruption follows closely upon the vaccination, without the development of an ulcer, preceded by a period of incubation, it may be assumed that the case is really one of latent syphilis.

From the above facts and considerations it would appear that the risk of conveying syphilis by vaccination may be rendered practically non-existent by the scrupulous observance of certain precautions, which are as follows: (1) The child yielding the vaccine should be at least eight weeks old, and it and its parents should be free from all trace of syphilis. (2) The lancet used should be perfectly clean and bright, and should be carefully cleansed with boiling water after each operation. (3) The greatest care should be taken not to draw blood when puncturing the vesicles, and should blood appear, not to use the lymph mingled with it. (4) Perfectly normal vesicles should be chosen—on the eighth day, if possible. With regard to the age of the child from whom the vaccine is taken, the statistics of 158 cases of hereditary syphilis show that in 146, symptoms appeared before the end of the third month, and only in 12 after that period.

CHAPTER VI

THE SOFT CHANCRE—PSEUDO-SYPHILIS—THE CHANCROID

The views which I entertain with regard to the differences between the virus of syphilis and that of the soft sore have been described at some length in a preceding chapter (see p. 42). It was there explained that the soft sore is not dependent upon a specific virus, and that it gives rise to changes of a purely local character. Its poison is capable of being generated *de novo*, and is then communicable from person to person. Inoculated under the epidermis or epithelium it causes irritation and the development of a pustule, which is succeeded by an ulcer; the irritation frequently spreads to the neighbouring glands and induces inflammation and suppuration. The secretion of the ulcer itself and the pus from the suppurating glands form the vehicles for the poison. Of the two lesions, the soft chancre is much more frequent than true syphilis. The soft chancre may be found on any part of the body, but as it is most often acquired during sexual intercourse, the genital organs are its usual seat. In men, it is most often found on the glans and prepuce; in women, on the internal surface of the labia majora and minora. In both sexes it is often multiple; its secretion is readily auto-inoculable. The soft chancre appears very soon after exposure to contagion, in the form of a small reddish patch; this becomes swollen, and gives place to a pustule which soon breaks and is succeeded by an ulcer. The pustular stage may be wanting; an excoriation or crack may be the first appearance. In whichever way developed, the ulcer increases in size, up to a certain point, and then remains stationary.

If at first circular in form, it is apt to lose this shape and to become oval or irregular. It is usually flat and superficial, but its depth varies, and appears to depend upon the part on which it is situated. At an early period other soft chancres are often formed on adjoining parts, by auto-inoculation, and it frequently happens that several sores make their appearance simultaneously. The edges of the ulcer are more or less perpendicular, and they often appear clean cut as though with a punch; they are sometimes everted. The floor of the ulcer is irregular, and covered with more or less yellowish or greyish matter, consisting almost entirely of pus. The border of integument surrounding the ulcer is red and painful. The base is usually soft or supple, and when the sore is pinched up between the fingers, there is no feeling of semicartilaginous induration. A certain amount of inflammatory swelling may, however, be set up by local irritation, but this subsides under rest and appropriate treatment.

The form and number of the sores vary greatly. On the edge of the prepuce there are often numerous ulcerating fissures; on the internal and external surface of this part the ulcers are usually flat and superficial or only slightly excavated. Sometimes, however, the ulceration extends through the prepuce and perforates it in one or more places. Ulcers near the frænum, as a general rule, perforate this structure and sometimes completely destroy it, and perforation of the urethra sometimes takes place from below. On the glans penis, the ulcers usually penetrate somewhat deeply. An ulcer at the apex is apt to surround the orifice of the urethra, and sometimes involves a portion of the mucous membrane of the latter structure. In other cases it extends for some distance down the urethra. The sulcus at the base of the glans penis is a frequent seat of chancre, which in this situation often attains a large size and becomes multiple. The union of several sores may cause the ulceration to involve the entire sulcus and to penetrate deeply into the substance of the glans. Great swelling of the prepuce and phymosis or paraphymosis are especially apt

to be associated with chancres in this situation, and sometimes both corpora cavernosa become involved in the swelling. Chancres are less common on the integument of the penis and scrotum. When they occur near the root of the penis they often assume a large size, and are apt to spread deeply in the tissues covering the pubes. On the female genital organs, soft chancres are generally found at the entrance to the vagina, on the inner surface of the labia majora, near the posterior commissure and the fossa navicularis. Multiple chancres are, of course, very common as a result of auto-inoculation. On the mucous membrane of the vagina and of the portio vaginalis uteri, soft chancres are less common.

Soft chancres are also found on other parts of the body besides the genital organs. The soft chancre being readily auto-inoculable, an ulcer is liable to form on any part with which the secretion from the sore comes into contact. The slightest abrasion or excoriation is sufficient to enable the virus to gain access to the tissues. Thus, chancres are often seen on the mons Veneris and in the neighbourhood of the anus, on the pubes and lower part of the abdomen, and on the inside of the thighs. They are also found on the nipple, the lips, the tongue, the cheeks, and the fingers. They have also been found on the scalp, but chancres on this part are usually of the indurated kind.

A soft chancre, left to itself, usually continues for from two to four weeks, without showing any tendency to heal. At first, indeed, it often tends to spread and burrow, and to invade neighbouring tissues. This process generally ceases during the third week, when the swelling, soreness, and secretion gradually diminish, and the stage of granulation sets in. The edges of the sore become flattened, the granulations become more and more prominent, and are covered with a healthy yellowish pus, and cicatrisation gradually progresses from the circumference towards the centre. The resulting cicatrix corresponds in size to the ulcer, is not indurated, but is more or less

depressed. Sometimes the granulations become florid and fungous, and rise above the level of the edges. Each freshly-inoculated chancre pursues the same course as the one from which it was derived. The chancres which appear last have usually a more rapid course than the original one.

The Diagnosis of a Soft Chancre.—This can generally be made without difficulty, but it is sometimes almost impossible at one examination to arrive at a definite conclusion as to the real nature of the case. We are, of course, guided by the situation of the sore, and by the account of its development, as given by the patient. When the genital organs of an adult are the seat of a lesion presenting the ordinary signs of a soft sore as given above, and there is a history of exposure to contagion, the nature of the case will be perfectly obvious. But when the sore is situated elsewhere, as, for example, on the face, fingers, buttocks, &c., the diagnosis may present many difficulties. The contagious character of the discharge is an important element. It is a well-established fact that the secretion of a soft sore, inoculated on the patient, on a healthy person, or on a syphilitic individual, will, in the large majority of cases, give rise to a sore of the same character, and yielding an inoculable secretion, &c. The first of these tests, viz. inoculation on the patient, can sometimes be resorted to, but the attempt is not always successful. It has also been shown by recent experiments (see p. 41) that pus of a non-specific character inoculated upon the patient himself, or upon other non-syphilitic persons, may cause the formation of pustules, the contents of which are also inoculable. The value of experimental inoculation, as a diagnostic test, is therefore less than was at one time believed.

With regard to the differential diagnosis of the soft sore, the lesions most resembling it are herpetic ulcers (to which some persons are peculiarly liable), abrasions produced during coition, cancerous ulcers, and, lastly, those forms of infecting sore in which the induration is either very slight or altogether absent.

Herpetic eruptions frequently occur on the genital organs. The prepuce is their most frequent seat, but they are also seen on the glans penis and body of the organ, on the integument of the scrotum, and on the vulva in females. The vesicles are more or less numerous, and their eruption is attended with itching. They are small in size; their contents are at first transparent, but soon become turbid. If protected from irritation, friction, &c., they speedily dry up and form thin scales, which become detached, leaving no scar behind them. If, as often occurs, the epidermis be rubbed off, small ulcers are seen. The vesicle or pustule with which a soft sore sometimes commences, is larger than that of herpes; its contents are, or very soon become, purulent, and the area surrounding it presents less decided signs of irritation. The existence of several vesicles or groups of vesicles would indicate the herpetic nature of the case. The two affections may, however, coexist; the virus may become implanted upon one or more vesicles of herpes. Under such circumstances a mistake may easily be made if a decided opinion be pronounced. If the appearance be due to herpes alone, it will subside in the course of a few days.

Erosions produced during coition vary much in appearance. If overlooked and unattended to, it may be impossible to decide as to their real nature. If, however, the patient's statements with regard to the time of their occurrence can be relied on, and ordinary cleanliness has been observed, the diagnosis can generally be made. The opinion, however, must at first be a guarded one, inasmuch as an abrasion may form the starting point of either form of sore. Under ordinary circumstances, and with proper care, abrasions heal up in the course of a few days. The possibility of subsequent induration must not be forgotten.

Epithelioma of the penis gives rise to ulcers resembling both forms of sore. The diagnosis, however, can seldom present much difficulty. Epithelioma commences in the prepuce or glans penis as a subcutaneous induration, or

warty growth, which soon ulcerates. The surface of the ulcer is not smooth, but more or less irregular, papillated, or villous. Fresh growths make their appearance and pursue the same course, and the ulceration extends with more or less rapidity. The microscope, if necessary, may be used to aid the diagnosis; the curdy material, which can be pressed out from epithelial growths, presenting a characteristic appearance. Should there be any doubt as to the nature of the case, mercury should be tentatively administered.

The differential diagnosis of the soft and hard sore will follow the description of the latter form.

The Minute Anatomy of the soft sore has been very carefully studied by Cornil, Kaposi, and others. The ulcerated portion has an uneven surface, the excavation being more or less deep, and is covered with a considerable quantity of pus, which also infiltrates the base of the ulcer. From the surface a uniform and extraordinarily thick cellular infiltration passes deeply into the corium. Here it terminates, being pretty sharply defined. The infiltration also penetrates for some distance laterally. The margin of the ulcer is formed in part by a group of swollen papillæ, and between them the Malpighian layer is increased in thickness. The surface of the ulcer is formed by the exposed corium infiltrated with cells, the papillæ being wanting. The cells are for the most part large and nucleated, and resemble lymph-corpuscles. The tunica adventitia of the vessels is much thickened, and the vessels themselves are enlarged.

Complications.—A soft chancre by no means always follows the simple course above described; the sore itself may become altered in various ways. It may be the seat of gangrene or phagedæna, and diphtheritic forms of soft chancre also occur. It may, in addition, give rise to phymosis and paraphymosis, and to inflammation and suppuration of the glands in the groin.

Gangrene of a chancre is of rare occurrence, but it is sometimes seen in persons debilitated by previous illnesses

and excesses of various kinds, and especially by excessive use of alcohol. Phymosis and paraphymosis, want of cleanliness, improper and irritating applications, may set up gangrene in predisposed persons. The first sign of gangrene is the appearance of inflammation around the sore. This becomes surrounded by a red and swollen areola, the colour of which grows darker and darker; the surface of the sore assumes a brown colour and secretes thinnish, dark-coloured pus, and, finally, the sore and its surroundings become of a dark colour and evidently reduced to the condition of a slough. This gradually separates, leaving a more or less extensive ulcer behind it. In neglected cases of phymosis, both layers of the prepuce may become involved, and an opening forms, through which the glans penis partially or entirely protrudes. The dorsal artery of the penis may be opened by the spread of the gangrene, and troublesome hæmorrhage ensue. The gangrene may spread until large portions of the genital organs are destroyed. In such cases, severe constitutional symptoms accompany the spread of the local disorder.

The Phagedænic variety of chancre was formerly much more common than it is at present. The severity of the epidemic at the end of the fifteenth century was in great measure due to the prevalence of this form of the disease. The destructive action may spread equally in all directions, or it may take a more definite course, involving the tissues in one direction only, while granulations spring up in the part originally affected. This latter is the *serpiginous* form of phagedæna. A third variety is the *sloughing phagedæna.* These last-named forms of chancre occur in persons of depraved constitution, and in those debilitated by want and by excesses of all kinds, especially by drunkenness. Active mercurial treatment, in the case of scrofulous or anæmic patients suffering from chancre, was probably a frequent cause of phagedæna in bygone days.

When a chancre becomes phagedænic, the ulcer extends superficially and deeply, and becomes more irregular in

shape. The base and edges are livid and œdematous, and the floor is covered with greyish or dark pus, mixed with blood. The patient complains of excessive pain, of a smarting or burning character, in the ulcer.

In the *serpiginous* form the destructive action continues, and follows a more or less definite course. The ulcer extends superficially rather than deeply. The progress is ordinarily slow, and the ulceration may continue to spread for several months. The destruction proceeds from a portion of the circumference of the original sore, and spreads in a curved manner, the spreading being accompanied by a more slowly advancing cicatrisation commencing from the original ulcer. The spread of the ulcer is also promoted by auto-inoculation from the secretion it yields. In this way a large surface may become involved. Thus the ulcer may spread over the penis, the scrotum, portions of the inguinal region, thighs, or abdomen.

The *sloughing phagedæna* is more severe and rapid, and spreads more deeply. The symptoms resemble those of hospital gangrene. As the ulcer spreads the surface sloughs more or less deeply. The ulceration extends chiefly to dependent parts, as the scrotum and labia. The pain is very severe, and the constitutional disturbance very considerable. This form is rarely seen at present.

The *diphtheritic* chancre is related to the gangrenous form. The sore becomes covered by a sharply defined, flat, yellowish-white adherent false membrane, which is not sensitive to the touch, and yields a little thin secretion, or is almost dry. This change in the sore may take place at the commencement of the healing process. There is no area of inflammation round the membrane. No change occurs for some time in the appearance of the sore, but after a while granulations spring up, pus is secreted, and the false membrane becomes detached. Cicatrisation rapidly follows.

Phymosis may occur, in the course of a soft chancre,

as a result of inflammatory infiltration of the prepuce or of swelling of the glans penis. The prepuce is apt to become swollen when there are one or more sores on its border, and both it and the glans are liable to become infiltrated when the chancre is situated on the inner surface of the prepuce, or in the furrow at the base of the glans. Under these circumstances, if the prepuce cannot be retracted, the secretion accumulates, the ulceration tends to spread, and new sores form. Unless the condition be relieved, the ulceration may lead to perforation of the prepuce, to such an extent as to allow the glans to protrude through the opening; or the urethra may be opened by the spreading of the ulceration. In addition to this, as the sore heals, adhesions may form between the glans and the prepuce.

Paraphymosis occurs less frequently than phymosis. It is an occasional complication of soft sores at the base of the glans penis. The prepuce having been retracted, the swelling due to the inflammation prevents it from coming forward over the glans and constriction takes place. This increases the congestion and swelling of the glans, and the subcutaneous tissue at its base rapidly becomes œdematous. Unless relieved, the constricting portions are apt to become ulcerated, and even gangrene of the glans penis may occur.

Inflammation of the Inguinal Glands.—The most frequent consequences of a soft chancre are inflammation and suppuration of the neighbouring lymphatic glands, preceded in some cases by similar conditions of the lymphatic vessels. When these latter are affected, one or more swollen hard cords, or red lines, are found in the integument of the penis, running from the neighbourhood of the sore and along the median line of the organ towards one or both groins. These cords are swollen and thickened lymphatic vessels. The swelling may be either uniform or nodulated; it is generally accompanied by more or less inflammation. After remaining for a few days, the redness and swelling may gradually disappear,

but if the irritation be severe, abscesses may form in the course of the inflamed vessel. Such abscesses are seen on the dorsum of the penis, where, on bursting, they give rise to small ulcers. The inflammation generally extends to the neighbouring glands, but these latter are often severely affected without any apparent inflammation of the lymphatic vessels. The processes which take place in the glands vary according to circumstances. Inflammation and suppuration, with their attendant symptoms, constitute the ordinary course, but the process is not always of an acute character. The enlargement is sometimes slow and gradual and unattended with much pain, and the swelling is then termed indolent or chronic. These differences depend upon the nature of the morbid material conveyed by the lymphatics, and also upon the condition of the patient. If the sore be in a stationary condition, the glandular enlargement may be rapid and painful and go on to suppuration, though with proper treatment this latter can generally be avoided; but if the sore be in a state of active ulceration, the symptoms of the glandular enlargement will be correspondingly severe, and suppuration will almost necessarily take place.

The genital organs being the common seat of chancres, the inguinal glands are those most frequently affected. In chancres of the lips or tongue, the sub-lingual and sub-maxillary glands are apt to become enlarged, while in chancres on the hand the swelling affects the axillary glands and the gland near the elbow. An inflammatory enlargement of a lymphatic gland is called a bubo. An inguinal bubo is not always on the same side as the chancre to which it is due, and chancres situated near the median line of the penis may give rise to buboes in both groins. A form of bubo has been described in which evidences of a primary lesion are wanting. This is called *bubon d'emblée*. It is supposed that a chancre or syphilis may give rise to bubo, without any antecedent ulceration as a starting-point. It would, however, appear to be more probable that in these cases the primary ulcer has

been very slight, and has, therefore, been overlooked by the patient.

Buboes are much more common in male than in female patients. This difference is chiefly due to the occupations and more active habits of life of the male patients. It is well known that active exercise tends to produce bubo in those suffering from chancre. Some patients are also much more liable than others to glandular enlargements as a result of irritation.

The first symptoms of acute bubo are tenderness, pain, and swelling of the affected gland. These symptoms rapidly increase, and are often accompanied by more or less fever. If only one gland at first appear to be implicated, the inflammation soon spreads to others in its vicinity ; the tumour increases in size, and the skin covering it becomes red and very tender. In inguinal bubo, all attempts to move the thigh cause great pain. Not only the glands are affected, but the loose connective tissue between them becomes involved in the inflammation. Buboes usually occur during the first week of the existence of the soft chancre, but they may appear at any stage of its course, and even after the ulcer has healed.

In the acute variety, fluctuation is generally perceptible in from eight to twelve days after the first appearance of the swelling. Sometimes when the swelling has been at first indolent, and has continued so for some time, it suddenly becomes acute, and evidences of suppuration make their appearance. Buboes vary much in size, according to the number of glands involved, and also to the manner in which the irritation and suppuration spread in the inter-glandular connective tissue. In scrofulous subjects, buboes generally attain a large size, and it often happens that the tumour presents several points, beneath which suppuration is manifest. When this process is fully developed, the pain somewhat abates, the integument gradually becomes thinner and darker, the abscess "points," and finally the skin gives way and the pus is discharged externally. Openings may take place at

several spots, and sinuses form between them. The process, in favorable cases, usually occupies from two to four weeks from the commencement of the swelling.

The ulcer caused by the bursting or opening of the bubo resembles the chancre from which it originated. It secretes pus, which, like that of the chancre, is inoculable upon the patient or other persons. The size of the ulcer depends, of course, upon the extent of the suppuration; its edges are jagged and generally undermined; its base is concave and irregular, and often covered with shreds of glandular and connective tissue. Sometimes portions of one or more glands protrude from the floor of the ulcer, the connective tissue in which they are normally enveloped having been completely destroyed by the suppuration, while the glands themselves have not suffered to the same extent.

An open bubo is liable to the same complications as sometimes occur in connection with chancres. Thus it may become the seat of phagedæna, gangrene, or the diphtheritic process, or the ulceration may assume a serpiginous type. This last complication is sometimes of a very severe character. The ulceration may spread and involve the entire inguinal region, the lower part of the abdomen, the upper part of the thigh, the perineum, &c. Cases are on record in which this form of ulceration has lasted for years.

In the majority of cases, however, the bubo after remaining open and discharging pus and *débris* for a period varying with its size, gradually closes. Granulations spring up from the floor of the ulcer, the margins assume a healthy condition, and cicatrisation commences. The process is delayed when the edges are much undermined, or are hard and everted; and when sinuses have formed, with several openings in the groin. The healing of the bubo is also much influenced by the general condition of the patient, and by the manner in which the treatment is carried out. If the parts are not kept at rest, the closure may be indefinitely delayed.

Prognosis.—With regard to the prognosis, it may be said that, as a general rule, the earlier the glands begin to swell after the appearance of the chancre, the greater the tendency to suppuration. On the other hand, when the sore is in process of healing, any glandular inflammation will probably subside without the formation of pus. As a matter of course, exercise tends to increase the probability of suppuration. In scrofulous and cachectic patients suppuration is especially likely to occur. The more diffused the inflammation, indicating that the connective tissue is considerably involved, the greater the liability to suppuration.

Diagnosis.—The diagnosis of buboes is generally made without difficulty, but there are other swellings in the groin with which they may be confounded. These may be due to a hernia; an undescended testicle in a state of inflammation; or a varix of the internal saphena vein. A *hernia* is a soft swelling, resonant on percussion, not painful unless inflamed or strangulated; it gives an impulse on coughing and can be reduced by pressure. It increases in size when the patient stands up, and diminishes or disappears when he lies down. If the hernia be strangulated, the symptoms of this condition will establish the diagnosis. An *undescended testicle* in a state of inflammation will be recognised by the absence of the organ from the scrotum on that side, and by the peculiar sensation which the patient experiences when the tumour is manipulated. The latter is ovoid in form, and its long axis corresponds with that of the inguinal canal. *Varix of the saphena vein* is apt to occur near the point at which it empties itself into the femoral vein. The swelling in varix is said to rise and fall isochronously with inspiration and expiration; but this test may fail, owing to thickening of the walls of the vein. If, however, the finger be applied to the vein below the varix, the swelling will subside, but if pressure be applied above the varix, the tumour will become more tense and prominent. In addition to this, a swelling due to varix will more or

less subside when the patient is placed in the recumbent position.

Treatment of the Soft Chancre and its Complications. —If the patient presents himself *while the sore is in its first stage,* it is advisable to destroy the surface, margin, and base of the ulcer by means of a sufficiently energetic caustic. Nitrate of silver, so commonly used, is *quite ineffectual.* Its action is too superficial, and it does little more than set up or increase inflammation. The most convenient and effectual caustic hitherto devised for the purpose of destroying a circumscribed lesion, is known as *Ricord's paste.* This is prepared by saturating vegetable charcoal with strong sulphuric acid. The action of the latter can thus be localised to the desired extent. A small portion is taken up on a glass rod and applied to the sore. The application causes considerable pain, but only for a few seconds; the caustic is easily manageable, and is thoroughly efficient. The charcoal soon becomes dry, and remains adherent to the slough. The sore secretes but little, and soon heals after the slough has separated. Caustics in the *liquid* form are more or less disadvantageous, mainly because it is difficult to localise their action. Strong nitric acid or the acid solution of nitrate of mercury may, however, be employed. A glass rod or a small splinter of wood is dipped into either of these, and applied carefully to the sore. Any excess of acid may be neutralised by allowing a little diluted Liquor Potassæ to trickle over the cauterised spot. Water-dressing is then to be applied and continued until the separation of the slough. When this has taken place the best plan of treatment consists in the application of iodoform, previously reduced to an *extremely fine powder.* The method which I generally adopt is as follows:—A carbolic acid lotion (1 to 40) is used three times a day in order to keep the sore and its surroundings scrupulously clean. After using the lotion the sore is thoroughly dried with a piece of lint, and the iodoform is then applied with a soft camel-hair brush. When on a visit to St Petersburg in 1874, I

noticed that iodoform was being very extensively used as an application to all forms of ulceration, and particularly to cancerous sores. On my return to England I introduced it, as an application to soft sores, at the Lock Hospital, where its employment has been attended with much success. It soothes pain and irritation, checks secretion, and acts also as a disinfectant. It should be applied *at once*, that is, without any preliminary cauterisation, if the sore when first seen has existed for more than a few days.

In ordinary cases the treatment as given above is all that is required. The patient should be enjoined to keep at rest as much as possible, to regulate his diet, and to avoid all sources of excitement. Inflammation of the glands in the groin is the complication mainly to be feared, but this can generally be avoided if the above directions are attended to.

Certain modifications in the treatment are rendered necessary by the situation of the sore and other circumstances. If, owing to phymosis, the ulcer cannot be properly exposed, no attempt should be made to destroy it by means of cauterants. Great care is necessary in applying these agents to sores in close proximity with the urethra in either sex ; for the application might eventually cause a fistulous opening, or, in the case of ulcers situated near the orifice, the resulting cicatrix might give rise to more or less occlusion. In the treatment of chancres in females the greatest cleanliness must be enjoined. The carbolised lotion should be freely applied by means of a syringe to the vaginal mucous membrane. If cauterants are used, great care is necessary when the sores are situated on the walls of the vagina. Measures should be adopted to keep the parts as free from secretion as possible, in order to avoid multiplication of the sores. The most common seat of soft sores in females is the mucous membrane lining the lower part of the inner surface of the labia majora. These parts are freely supplied with sebaceous and mucous glands, which secrete profusely

under the irritation caused by the development of a chancre. Their secretion, mixed with the discharges from the sore, is apt to find its way to adjacent parts, viz. to the genito-crural cleft and perineum, and to give rise to new ulcers. These are liable to spread, especially in the perineum and around the anal orifice, parts not easily kept clean, and in which ulceration is painful, tedious, and difficult of cure. The menstrual discharge and the secretions of any existing uterine or vaginal catarrh also act as vehicles for the spread of the virus.

Treatment of Phagedænic Sores.—Prolonged immersion in hot water (at a temperature of 97°) is the remedy upon which most reliance can be placed. In severe cases it may be necessary to prolong the immersion for a considerable period. A few years ago I had under my care a patient in whom the good effects of this treatment were manifested in a remarkable manner. The case was one of bad chancres of the penis rapidly running into phagedæna. I applied nitric acid freely on two occasion, the patient being under chloroform, but the phagedæna continued and caused very severe pain. The patient was placed in the hot bath, when the pain very soon ceased; opium was also administered internally in repeated doses. He was kept in the bath *night and day, for fourteen days*, the water being frequently removed and the temperature maintained. Under this treatment the phagedæna soon ceased to spread, healthy action was set up, and the sore healed. So great was the relief afforded by the warm water that, during this lengthened period, the patient refused to leave his bath except for necessary purposes; for the pain returned after he had been out of the water for a few seconds. There were other circumstances worthy of notice connected with this case. Two months after the phagedæna an eruption of rupia appeared all over the body, not having been preceded by roseola or any other secondary manifestation. This, again, was followed, after an interval of three years, by symptoms of spinal disorder. I have already referred (see p. 26) to

other cases in which early rupial ulceration was followed by symptoms of intra-cranial and spinal lesions.

In less severe cases the application of a solution of tartarated iron (gr. 10—60 to ℥j) will be serviceable. Another local remedy of great value is a solution of the permanganate of potash (grs. 10—80 to ℥j), the strength proportioned to the severity of the case, and the lotion being applied every three hours. General treatment must of course be adopted. If the patient's surroundings be of an unfavorable character from a hygienic point of view, removal is absolutely necessary. Fresh pure air and free ventilation should, if possible, be secured in dealing with any case of phagedæna. Nourishing food, stimulants, tonics of various kinds, particularly quinine and the mineral acids, and opium in doses according to circumstances are all likely to be required in the treatment of these cases. Cod-liver oil may also be given, especially if there be any indication of scrofula. It is, perhaps, almost needless to add that mercurials in any form will only aggravate the mischief.

When phymosis and phagedæna coexist, slitting-up the prepuce should, if possible, be avoided; that is, the operation should not be performed until every other plan has been tried and found to be inefficacious. If the knife be used, extension of the phagedæna to the new wound, and a larger surface to be dealt with, will be the almost certain results.

Treatment of Phymosis and of Paraphymosis.—In cases of phymosis, due to inflammation of the prepuce in cases of soft sores, it is best to attempt to relieve the condition by keeping the patient at rest; by administering a purgative; and by injecting every few hours a weak carbolic acid lotion (℥j to ℥vj) between the prepuce and the glans. If the swelling continues and the prepuce cannot be retracted, this latter must be divided, so that the sores may be exposed to view. There is of course some risk that the wound may assume the characters of the ulcer; but, on the other hand, if the phymosis be suffered to continue,

the ulceration will certainly spread, and it may go on to such an extent as to perforate the prepuce.

When paraphymosis coexists with soft sores, and there is danger that the constriction will lead to gangrene of the glans, the best method of effecting reduction is to take the glans penis between the fingers and thumb, covered with a wet towel. After the part has thus been thoroughly compressed, and the blood squeezed out of it, the prepuce can generally be drawn forward without difficulty. If reduction cannot be accomplished owing to the presence of constricting bands, these latter must be divided with the point of a bistoury, care being taken not to injure the dorsal vessels of the penis.

Treatment of Buboes.—The two main objects to be attained in the treatment of buboes are to promote resolution, and to prevent suppuration. The treatment becomes more difficult when a deep-seated gland is involved, or when many glands are inflamed at the same time. On the other hand, when a single superficial gland becomes swollen and painful, the symptoms, as a general rule, readily subside under appropriate treatment. As stated in a former page, the inguinal glands are those which are generally affected ; and as soon as pain and swelling are complained of in the groin, the patient must be kept at rest and in the horizontal position. A bag of ice should be immediately applied, and a saline purgative may be given. The diet should of course be reduced, and no stimulants should be allowed. The more superficial the affected glands, the more likely is this treatment to prove efficacious. If the swelling be deep-seated, suppuration may have commenced before the symptoms become very prominent. It is well, however, to begin with the treatment as given above. If it fails, and suppuration be clearly unavoidable, hot linseed-meal poultices should be constantly applied. In cases where the process is less acute, and there are no marked signs of inflammation of the skin, a mixture of equal parts of tincture of iodine and tincture of galls may be tentatively applied. If, in

such a case, it be absolutely necessary that the patient should move about, a pad should be placed over the swelling and kept in position by a bandage. Plasters are not to be recommended.

The methods above described have for their object the promotion of resolution; other plans must of course be adopted if suppuration has taken place. The objects then to be attained are the completion of the process, the evacuation of the pus, and the healing of the abscess. The evils to be guarded against are purulent infiltration of the connective tissue, great loss of substance and tedious and prolonged suppuration. Gangrene and phagedæna are complications which seldom occur, but it is necessary to be prepared for them, and to avoid all procedures likely to cause them.

It must be borne in mind that the course of a suppurating bubo, after an opening has taken place or has been made, may differ materially from that of an ordinary abscess, inasmuch as the wound often closely resembles the sore which has given rise to the swelling. The method of opening is therefore a matter of some consequence. If the suppurating gland or glands be superficial, an incision by means of a curved bistoury into the centre of the swelling will, as a general rule, be all that is required, and this should be done as soon as fluctuation can be perceived. The patient should always be in the recumbent position when the incision is made; the bistoury should be inserted perpendicularly to the surface, and withdrawn in the same direction after the parts have been sufficiently divided. The pus having been allowed to escape, a small piece of lint should be inserted into the wound in order to prevent its too early closure: a warm poultice is then to be applied. It frequently happens that the suppuration is progressive, one gland after another becoming affected. Frequent incisions will then be required; they should be no larger than is necessary for the evacuation of the pus. In other cases several glands are affected at the same time, and the suppuration extends to

the inter-glandular connective tissue. Small openings should be made into every prominent part, and the wounds must be kept open with lint, over which warm poultices are, of course, to be applied. If portions of skin are obviously undermined, the incisions should be so made as to give free drainage. In favourable cases, after a few days, pus ceases to escape, the discharge becomes thinner, granulations form, and the wounds gradually close. Contraction of the cavities may sometimes be accelerated by pressure, and injections of a weak astringent lotion (Zinci Sulph. grs. ij, to ℥j).

It often happens that suppurating buboes pursue a very tedious course. In cases in which suppuration is retarded poultices should be kept constantly applied, and an incision should be made as soon as any fluctuation is perceptible. If several deep-seated glands are involved, the pus is long in reaching the surface, it burrows in the connective tissue, and sinuses are apt to form in different directions. Such cases are often very obstinate, and they require careful treatment. The sinuses should be freely laid open, and lint should be inserted between the edges of the wounds, the patient of course being kept at perfect rest. The wounds should be syringed every morning with carbolic acid lotion, and afterwards dressed with zinc lotion, if they require to be stimulated. If the track of a sinus runs close to the large vessels in the groin, instead of making an incision, a drainage tube should be inserted. With regard to other methods of opening buboes, such as the use of caustics, aspiration, &c., I believe them to be inferior to incisions. In these cases of prolonged suppuration the patients are often anæmic and weakly, and therefore good food, tonics and stimulants are generally indicated. The healing process may require several months for its completion. On slitting up a sinus, its internal surface sometimes presents a bluish-white, glazed appearance, with a watery secretion, and without any tendency towards granulations. In such cases the surface should be lightly touched with nitrate of silver from time

to time, until granulations are induced. In other cases the edges of the wounds left after incision form livid overhanging flaps, with little vitality and no tendency to close. These should be cut off with scissors or a sharp bistoury. Sometimes portions of glands are seen projecting from the bottom of a wound or into the track of a sinus. These interfere with the healing process, and should therefore be carefully removed with the knife or scissors. As mentioned above, the wounds in some cases after incision closely resemble a large soft sore. They should then be treated by carbolic acid lotions or weak solutions of sulphate of copper, the utmost cleanliness being enjoined in order to prevent the spreading of the ulceration. The complications to which open buboes are liable, viz. phagedæna, gangrene and diphtheritis, must be treated according to the rules laid down for soft sores under similar circumstances. Any hæmorrhage which may occur, must be dealt with according to the ordinary rules of surgery.

CHAPTER VII

THE INDURATED CHANCRE—SYPHILIS

This, like the previous form, may be found on any part of the body, but the genital organs are its most common seat. In the male it most frequently occurs on the prepuce, on its outer and inner surfaces but especially at or near its border; in the sulcus at the base of the glans; within the orifice of the urethra, and on the glans itself. In this last-named spot there is generally less induration than on the prepuce. In the sulcus at the base of the glans the induration is always very marked. Next to the genital organs, the lips and mouth are the most frequent seat of the hard chancre. In women the majority of these chancres are situated on the labia majora and minora and on the clitoris. The lesion is comparatively rare on the vaginal mucous membrane; it is somewhat more frequent on the portio vaginalis uteri. Hard chancres are also occasionally found in the neighbourhood of the anus, and on the lower part of the abdomen, and with regard to other portions of the body, they are sometimes found on the nipple and various parts of the face and fingers.

The hard chancre, in the great majority of cases, is a single lesion; in this respect it differs very remarkably from the soft form. If several hard chancres are found upon the same person, the probability is that they have become simultaneously developed; for a sore of this character is not inoculable, as such, upon the subject of it.

The manner in which the primary lesion of syphilis makes its appearance varies in different cases. It may appear (1) in the form of a papule, which subsequently

becomes more or less eroded but does not ulcerate. (2) It may take the form of superficial erosions. (3) The edges and base of an ulcer, originally soft, become indurated. (4) The disease appears in the form of an indurated spot, the surface of which ulcerates. In whichever way it commences, the period of incubation is usually a prolonged one. Its duration varied from eighteen to thirty-five days, in cases inoculated with the secretions of secondary lesions. When the infection takes place from a primary sore, the period of incubation is probably shorter, though in three well-authenticated cases it was found to be eighteen, twenty-three, and twenty-eight days respectively. Fournier gives seventy days as the longest period of incubation known to him.

1. *The dry papule*, particularly described by Lancereaux, is the rarest form which syphilis assumes on its first appearance. He states that after a prolonged incubation, a papular protuberance makes its appearance at the point of contamination, usually having the form of a patch, one or more centimeters in extent, of a dark or brownish-red colour, round or oval, firm and elastic, and sometimes covered with whitish scales. This disappears by resolution; the induration, without proceeding to ulceration, gradually loses its resistance and elasticity, diminishes in extent, and leaves behind it a slight violet-coloured or darkish depression.

2. *Superficial erosions.*—This, according to Bassereau, is the most frequent form in which primary syphilis occurs. Bassereau met with it in 146 out of 170 cases. It generally occurs behind the corona glandis and on the internal surface of the prepuce. It commences in the form of a reddish spot, but slightly raised, dry and papular. Desquamation takes place and subsequently some amount of ulceration, but there is little or no pain in the part. The spot is circular or ovoid, or more or less irregular in form. The surface of the ulceration is rose-coloured, smooth and flat, or very slightly excavated. The induration is slight and superficial. The discharge is serous in

character and scanty, but is apt to become purulent on the application of irritants. Cicatrisation is comparatively rapid, and leaves scarcely any traces, apart from the induration which disappears in the course of time.

3. *Induration of the edges and base of an ulcer, originally soft.*—The change takes place most frequently during the third week. The ulcer is then discharging pus, and its edges and base are inflamed, but not indurated. In the course of a few days the appearances change; the ulcer looks less inflamed, is less deep, its secretion diminishes and becomes thinner and viscid. The floor becomes raised, loses its irregular appearance and looks flat; the margins become smooth, are continuous with the surface and are no longer undermined. Beneath the ulcer and around its border, a more or less hard substance becomes developed, the result being that the sore as a whole is raised, and its depth and circumference are lessened. The ulcer is no longer painful. After a sore, especially if situated on the prepuce, has assumed these characters, it can be readily taken up between the fingers and isolated from the adjacent tissue. The semi-cartilaginous hardness is at once felt. Unless irritation be set up, the surface of the ulcer becomes more and more smooth and glistening. The discharge gradually diminishes, until the sore looks almost dry. Cicatrisation takes place and the surface is quickly covered with a thin pellicle. The process is aided by the progressive development of the induration which tends to diminish the secreting surface. The induration remains, and may even increase, after the cicatrisation is complete. The hard nodule can then be readily felt. Its surface is smooth and shining; the pellicle covering it is very thin and adherent, and is sometimes, but by no means always, marked by a small depression, which indicates the seat of the ulceration. This latter may have been so slight as to leave behind it a cicatrix so minute as to be almost imperceptible.

The induration varies considerably in different cases, as

regards its extent and duration. It is for the most part roughly hemispherical in shape, *i.e.* flattened on the surface, while its convexity projects into the subjacent tissues. In other cases, the induration takes the form of a thin disk, let in, as it were, among the softer structures. If the mass be of large size it may be either raised above the surrounding level, or less prominent, but spread over a considerable area. As a general rule, it is bounded by a sharp and well-defined border. With reference to its duration, this varies exceedingly in cases left to themselves. It often lasts for several months; instances have been observed in which it persisted for several years, and it may remain for an almost indefinite period. Its duration does not appear to depend upon its amount. In some cases after the sore has apparently healed, the cicatrix gives way and ulceration is again set up. The ordinary course, especially when mercury is administered, is for absorption to take place. This process gradually continues, the induration becomes less and less firm, and the nodule diminishes in size until its existence can no longer be detected.

(4) The fourth variety is that in which the disease appears as *an indurated nodule*, the surface of which sooner or later ulcerates. The ulceration here is, therefore, secondary to the development of the induration, and in a few rare cases the latter has been noticed to be unaccompanied by any breach of surface. In those experiments in which the poison of syphilis was inoculated on healthy subjects, a red spot followed by a papule or small nodule was the first sign that presented itself. This papule then becomes covered with scales, forming a crust, under which an ulcer more or less rapidly develops itself. The scales or crust fall off, and a sore appears, resembling that which is seen when a small soft chancre becomes indurated. The edges are raised and rounded; the surface is smooth and covered with a little viscid secretion. The induration, as in the previous form, is usually hemispherical, but its shape varies considerably. The nodule,

as before, can generally be pinched up between the fingers, and more or less isolated from the surrounding parts. The subsequent course of the lesion resembles that of the third variety; small granulations appear and cicatrisation ensues. The induration persists for a longer or shorter period; and in some cases, the cicatrix, instead of being bluish-red or white, assumes a dark brown or bronze colour, which, however, disappears in the course of time. The conversion of the various forms of induration into mucous patches has been occasionally observed, and especially in places where mucous surfaces are in contact.

The hard chancre, in any of its forms, is sometimes attacked by gangrene, sloughing, and phagedæna. These complications have been already referred to in the description of the soft sore, in connection with which they are more frequently seen. It sometimes happens that the primary lesion of syphilis is in the form of a phagedænic ulcer. Phymosis and paraphymosis are occasional complications of the hard sore.

The various forms assumed by the primary manifestations of the syphilitic poison may, in part at least, be explained. It seems probable that the differences in some measure depend upon the nature of the medium in which the contagious particles are suspended or contained. If this medium be pus or purulent fluid, it will exhibit irritative properties, and more or less inflammation and swelling will appear at the point of contamination. Ulcerative destruction will rapidly set in, and an ulcer becomes developed, in the borders and base of which induration appears as time goes on. A syphilitic sore of the third variety is then presented. If, however, the syphilitic poison is contained in a medium devoid of irritative properties, there will be no signs of irritation at the affected spot, but in the course of a few days or weeks a papule or nodule will become developed. This will present the appearances described as characteristic of the fourth variety. In the case of the superficial erosions, it

may be supposed that the syphilitic poison becomes implanted upon an excoriation, either previously existing or caused during the act of copulation. If the secretion in which the virus is contained be of a non-irritative character, little or no ulceration will ensue, the excoriation disappears, and a considerable period may elapse before any nodule or other sign of induration is manifested. If the breach of surface be somewhat more decided in character, the sore will tend to assume the appearance of a soft chancre, induration, as before, setting in at a later stage.

It does not appear that the subsequent course of the disease depends in any way upon the form assumed by the primary lesion. There is, however, no doubt that individual peculiarities, and especially the health and habits of the patient, play an important part in determining the severity or otherwise of the secondary manifestations.

THE MINUTE ANATOMY of the hard sore has been studied by Kaposi,* Caspary, Auspitz, and others. The following are some of the results of their investigations. The anatomical conditions vary according to the stage of the induration. In a well-marked specimen, viz. a characteristic ulcer with a typically indurated base, the surface on section will be found to be pale red in colour, not containing much blood, uniformly compact, smooth, prominent, and of a firm elastic consistence. Perpendicular sections under the microscope show cellular infiltration of the papillæ and throughout the corium, uniform in character and closely distributed. This infiltration has a somewhat abrupt margin at the sides and below, and is surrounded by fibrous tissue with large meshes and containing irregularly distributed cells, each with a large strongly refractile nucleus. The cells of the induration, more highly magnified, are found to correspond in size with those of granulations, though on the whole somewhat smaller; they contain one or two nuclei and finely dotted

* Kaposi, 'Deutsche Chirurgie,' Lief. 11, 1 Hälfte, p. 66.

protoplasmic substance; and they are imbedded in a network of narrow meshes. On the surface of the ulcer, the network and the cellular deposit are irregularly exposed. Numerous isolated nuclei, small shrivelled cells, and other similar structures are also found. The papillæ surrounding the ulcer are preserved; but they are enlarged and present club-shaped endings and are infiltrated with cells extending from the corium. The rete between them is very thin, and forms a delicate layer over them. At several points on the surface of the ulcer, there are isolated patches of epidermis and rete lying on the surface of the infiltrated corium. At other points there are remains of the rete, and signs of the papillæ, the limits of each being more or less obliterated. The part infiltrated with cells is but scantily supplied with vessels, the walls of which are considerably thickened and the calibre much reduced.

The following are the conclusions arrived at by Kaposi (a supporter of the Unity Theory) with regard to the differences in the histology of the soft and hard sores:

"In the soft chancre, as in the hard, we have to do with an inflammation of the corium, specific as regards its cause and its course. The inflammatory cell infiltration denotes the early stage common to both chancres. The subsequent course may be in either of two directions, histologically and clinically diverse. On the one hand, proliferation of the epithelium may be associated with liquefaction and disintegration of the infiltration. A soft sore is the result; or the cellular infiltration is followed, as in other inflammations, partly by disintegration, but to a greater extent by new formation of connective tissue. Then we have induration with or without superficial ulceration." Kaposi further states that the specific characters of the sclerosis cannot be inferred from its histological structure alone; and that this latter furnishes no explanation of the marked clinical difference between the soft sore and the typical sclerosis.

Diagnosis of the hard chancre.—The symptoms to be

relied upon are the induration of the base and margins of the sore, and the induration of the lymphatic glands in the vicinity, this latter being the most certain sign. The situation of the sore and the history of its development aid the diagnosis. As a matter of course a hard chancre, situated on the genital organs or on the lips, is more readily diagnosed than one situated elsewhere. With regard to the induration itself, this, in the large majority of cases, is sufficiently characteristic. It is, however, true that chancres presenting little or no induration are occasionally followed by constitutional symptoms, but such cases are very rarely met with (see p. 39). It is generally asserted that hard sores are comparatively uncommon on the female genital organs, and that the soft sores on these parts are often followed by constitutional symptoms. There is, however, no real basis of facts for these statements. The induration is often so slight as to be overlooked; it is sometimes so thin as to resemble a layer of parchment. Such induration is, of course, far less easy to discover on the vaginal walls than on the prepuce, where the sore can be taken between the thumb and finger. Besides this, a soft sore discovered on the labia may be regarded as the only lesion present, in cases in which a coexisting induration or papule on another portion of the genital organs is overlooked. A typical induration, situated in a part accessible to the touch and where the skin is lax, can be taken up between the fingers and isolated. When the hardness is due to inflammation (set up perhaps by the application of caustics or other irritants) it is of a more diffused character and tends also to subside. A soft chancre situated on the internal surface of the prepuce, near the base of the glans, is particularly liable to inflammatory induration. It may for some time be impossible to decide as to the true nature of the sore in such a case; but if glandular induration be absent, a favorable prognosis may be given. The hard chancre is generally single; its secretion is scanty and non-purulent, unless the sore be irritated; it is either non-inoculable

upon the patient, or it gives rise to a sore resembling a soft chancre. The induration is unattended by pain, unless inflammation be set up by the action of irritants, &c.

Differential diagnosis of the hard chancre.—The differences between the hard and the soft sore have already been indicated. There are a few other lesions, occurring on the genital organs and lips, which more or less resemble the hard chancre. The most noteworthy of these are malignant disease, boils, and certain other pustular eruptions. A slowly developing cancerous growth on the prepuce or labia, may, for a time at least, simulate the initial stage of syphilitic induration. Epithelioma of the vulva sometimes closely resembles a hard sore. The microscope in such a case may aid the diagnosis, but the nature of the lesion will become quite obvious as time goes on. Infiltration due to carcinoma tends to spread in all directions, and is succeeded by disintegration of tissue and ulceration. The surface of the ulcer is not smooth and velvety, but more or less irregular, villous and papillated. The diagnosis of syphilitic ulceration occurring elsewhere than on the genital organs or lips may present much difficulty. In the case of an ulcer of the cheek, occurring in an old man, the lesion was regarded as due to an entirely different cause until an eruption of syphilitic roseola indicated the true nature of the case.

Furuncular eruptions on the labia and lips sometimes give rise to nodular formations, which subsequently ulcerate. Their number and the pain they cause will serve to distinguish them from syphilitic induration. Small chronic ulcers on the labia, due to boils, more or less closely simulate syphilitic induration, but they are not associated with any peculiar condition of the glands.

Treatment of the indurated chancre.—The general treatment of syphilis will form the subject of a separate chapter; but directions for the treatment of the more prominent lesions will follow the description of their symptoms. In considering the treatment of the indurated

sore, the question as to whether any of the so-called abortive measures are useful or the reverse, is one of considerable importance. Various methods have been suggested for destroying the induration, and some are still practised. Excision by means of a scalpel or pair of scissors has its advocates, while others employ various caustics of a more or less potent character. My own views may be summed up by stating once for all, that I place no reliance whatever either in excising an indurated sore, or in attempting to destroy it by any cauterant. My firm belief is that the induration is the local manifestation of the constitutional infection, which would continue to develope itself even if it were possible to remove every vestige of the so-called primary lesion. The induration, in my opinion, is a symptom of the previous and complete contamination of the system. It does not fall within the scope of this work to discuss minutely the points on which much controversy still exists, but with regard to the so-called abortive treatment of the indurated sore, it must be allowed that several striking instances of its apparent efficacy have been adduced by good authorities. The advocates of this practice, however, admit that, if an indurated ulcer situated, for example, on the prepuce, be freely removed with knife or scissors, the *general* result is that the induration reappears in the margin of the wound made by the incision, to be followed in due course by the ordinary constitutional symptoms. It is, however, asserted that in a smaller number of cases, the excision is not followed by any return of the induration or by any appearance of constitutional symptoms. The induration is therefore regarded, by those who practise excision, not as the local manifestation of the constitutional taint, but as a local lesion in which the syphilitic poison increases or becomes developed, and from which it is conveyed to the glands and other parts of the body. Some of those who adopt this theory go so far as to say that *excision of the sore is not contra-indicated by swelling and induration of the lymphatic glands.* My own opinion is that the

glandular affection is the most important sign of the nature of the case. I admit that absence of induration in the base and edges of the sore does not *absolutely* demonstrate its non-infective character, but I maintain that such absence in the very large majority of cases justifies such a conclusion. If, however, I meet with a case in which induration is absent from the parts surrounding the sore, but the glands in the groin stand out and are hard to the touch, I entertain no doubt that the patient is the subject of syphilis. It is impossible to reconcile the conflicting statements with regard to the efficacy of the so-called abortive treatment. It is, however, a fact that not a few of those who once practised it are now convinced of its inefficacy. The advisability of cauterising all soft sores seen within four or five days of their appearance has been already mentioned; but the recommendation is not intended to apply to any sore *in which the slightest traces of induration are manifest.*

Mercury is the main agent to be relied upon in treating an indurated sore; and its use should be commenced as soon as the diagnosis is made. It is unadvisable to wait for the development of additional symptoms. On the whole, the most convenient way of administering mercury is by the mouth, and the best preparation is the Pil. Hydrargyri. Of this gr. iii—v combined with Opii gr. ¼—½ should be given night and morning, until the effects of the mercury are perceptible on the gums. The patient must of course be carefully watched, and the dose reduced, or the medicine discontinued for a time, should its action become too great. Salivation must, if possible, be avoided. The course of mercurial treatment must be a prolonged one; to be thoroughly efficacious, it should extend over two years, the object being to produce, to their full extent, the alterative effects of the remedy. The Lotio Nigra or an ointment composed of equal parts of vaseline and Unguent. Hydrarg. should be applied to the sore, which usually heals without difficulty.

The above is a brief description of the ordinary method

which the author adopts in treating an indurated sore ; but various circumstances may necessitate certain modifications. There are also other ways in which mercury may be administered, and various other preparations may be given by the mouth. Inunction with Unguent. Hydrargyri is a very efficacious method, and it has the advantage of not producing irritation of the bowels. On the other hand, the frequent application is troublesome, and causes the skin to appear dirty, and patients soon get tired of it and can scarcely be persuaded to persevere with its use. Other preparations used for inunction present similar disadvantages. The vapour bath is also troublesome, and more or less inconvenient. It is, however, useful, as will hereafter be pointed out, in some forms of syphilitic affections of the skin. The hypodermic injection of the perchloride of mercury presents no advantages over other methods of administering the drug ; on the other hand, the injections often cause great pain, and lead to the formation of abscesses. With regard to the iodides of mercury, they should be reserved for later stages. If, as generally believed, iodine acts as an eliminant of mercury, there can be no advantage in using it when the production of the constitutional effects of the latter drug is the object to be attained. Further details with regard to the administration of mercury will be given in a subsequent chapter. It must of course be borne in mind that particular care is necessary in dealing with scrofulous and cachectic individuals affected with syphilis. Any kind of active mercurial treatment is certain to do more harm than good, and, according to the special circumstances of the case, it will be necessary either to abstain altogether from using the drug, or else to administer it tentatively with the greatest caution and in very small doses.

With regard to the time at which the mercurial course should be commenced for the treatment of syphilis in its earliest stages, there is a marked divergence of opinion. Some surgeons think it more expedient to defer specific treatment (*i.e.* mercurial) until some other manifestation

takes place, while others commence the administration of the mercury immediately induration is detected. As will appear from what has been said above, the author's opinion is decidedly in favour of the latter practice. If mercury is to be regarded as in any sense an antidote or a specific for syphilis, it is certainly advisable to lose no time in bringing the system under its influence when once the diagnosis has been made. Its early administration, even if it does not prevent the development of general symptoms, certainly tends to mitigate their severity. It may therefore be stated that, as a general rule, the earlier mercury is administered the better are the prospects of ultimately subduing the disease. And this proposition may be maintained to be correct, whatever view be adopted as to the real significance of the induration.

Glandular Induration connected with the Hard Sore.

It has been already stated that induration of the lymphatic glands in the neighbourhood of a chancre is to be regarded as decisive evidence of the infective nature of the lesion. The induration referred to is an almost constant symptom: statistics show that it is absent only in about one per cent. of the cases in which a sore is followed by constitutional manifestations. The lymphatic vessels connecting the glands with the sore are likewise frequently indurated, but this symptom is sometimes absent, and is often inconspicuous.

Inasmuch as the genital organs are the most frequent seat of the chancre, the inguinal glands are those in which induration most frequently occurs. When the chancre is situated on the lips, the submaxillary glands are affected, and when the hand is the seat of the lesion, the gland near the internal condyle of the humerus and the glands in the axilla become enlarged and indurated. With regard to the time at which the glandular swelling

commences, this may be stated generally to be about seven days after the appearance of the primary sore. A single gland is first affected, and the mischief gradually spreads to others in the immediate neighbourhood. The swelling may appear in one or both groins; in the former case it is generally, but by no means always, on the same side as the original lesion. It comes on gradually, and is unaccompanied by pain or other signs of inflammation. The glands are felt to be swollen and firm; pressure causes little or no pain, and the skin is freely moveable over the tumours. The swelling varies in extent according to the number of glands implicated. It generally forms a sort of chain or bundle, in which the separate glands can be more or less clearly distinguished. When several glands are severely implicated, they form a large irregularly-shaped tumour. It seldom happens that the patient complains of any pain or discomfort in moving the limb. A feeling of tension in the groin is generally all that is noticed. In very stout persons it may be difficult to detect the swollen glands. In scrofulous subjects, on the other hand, the swelling is usually large and prominent.

This glandular enlargement has a very protracted course. It remains stationary for several months and then slowly disappears. Fatty degeneration, followed by absorption, is the ordinary process, but chalky deposits sometimes occur. Suppuration very rarely happens, except where scrofula coexists, but it may be induced by violent exercise or other sources of irritation. In scrofulous subjects the indurated glands are especially liable to become inflamed, and suppuration is not uncommon, and when it does occur its course is always very tedious. Redness of the skin and its adhesion to the swollen glands are the first symptoms. The patient complains of pain and tenderness, the redness and swelling increase, and fluctuation can be detected at several points. If an incision be made a thin serous fluid escapes. Sinuses are very apt to form, and if these be laid open, portions

of the enlarged glands are often seen in the course of the wounds. The sinuses may extend for a considerable distance from the inguinal region, and the semi-purulent fluid may find its way into the crural canal, and penetrate deeply between the muscles on the anterior aspect of the thigh.

In non-scrofulous subjects, as above said, suppuration is extremely rare. In this respect the glandular enlargement connected with the hard sore contrasts very decidedly with the acute adenitis which so often accompanies the soft chancre. If suppuration has taken place, it is almost certain that there will be no constitutional manifestations, whereas the induration is pathognomonic of constitutional infection.

There can seldom be any difficulty in the *diagnosis* of glandular induration of syphilitic origin. The *treatment* is the same with that of the chancre to which the induration is due. Under the continuous administration of mercury the swelling gradually subsides, but traces of it often remain for considerable periods.

CHAPTER VIII

CONSTITUTIONAL SYPHILIS

Syphilitic Fever—Affections of the Skin—Roseola, Papules, Pustules, Syphilitic Tubercles, Gummata, Rupia, &c.

In the sketch given in a preceding chapter of the ordinary course and symptoms of syphilis reference was made to the so-called "second incubation" as being a peculiar feature of the disease. This process takes place in the interval between the development of the induration and the production of symptoms, some of an objective, others of a subjective character. The term "secondary" is used to designate those symptoms which are considered to result from the saturation of the blood by the syphilitic virus, and which appear, in a more or less regular order, in parts of the body at a distance from the original lesion. The first manifestation takes place, on an average, in the seventh week after the development of the induration. Certain symptoms, however, occur even during this interval, but they are generally of a slight character, and are often unnoticed by the patient. The eruption of a specific exanthem is usually regarded as the first manifestation of secondary syphilis. This in many cases is either accompanied or speedily followed by an affection of the mucous membrane of the throat.

But before any skin-affection appears, glandular swelling and induration can generally be detected in various parts of the body. The so-called indolent buboes have been already described. Other glands, however, besides

those in the groins exhibit signs of irritation. The glands at the posterior border of the sterno-mastoid muscle, the posterior occipital and the posterior auricular glands are apt to become swollen, and the same appearance may sometimes be noticed in a gland situated just above the inner condyle of the humerus. It may be presumed that many other lymphatic glands in the body are similarly affected; the cervical glands and the gland near the elbow are particularly accessible to observation. The submaxillary glands are less frequently affected at this stage. This enlargement of the glands has no necessary connection with any eruption upon the skin; the glands begin to swell before any eruption appears, but it generally happens that the swelling becomes more marked during the development of the cutaneous affection, and in the neighbourhood of lesions of the mucous membrane. The glandular swelling remains for an indefinite period; alterations in size occur from time to time, and diminution is generally observed when the patient is under the influence of mercury.

Another symptom which sometimes occurs during this interval may be described as a general feeling of ill-health. The patient complains of a sense of discomfort, weakness, and lassitude; the skin is pale and dry, and the eyes are dull and heavy looking. Sleeplessness and loss of appetite are occasionally observed. These symptoms are most marked in debilitated subjects; they are often absent or extremely slight in persons previously in good health. Pains resembling rheumatism are sometimes felt in the joints and long bones. The pains are not constant or confined to any one spot. They are generally worse at night, and cause restlessness and discomfort. The affected joints are sometimes, though rarely, swollen at this period. Headache is more common. It may amount only to a feeling of dulness or heaviness, or it may be severe, as if the head were being forcibly compressed. Like the pain in the limbs, the headache is worse at night. The scalp is sometimes

tender on pressure, so much so that the patient is unwilling to place the head on a pillow. In other cases the pain is not increased by pressure. Vertigo, dizziness, indistinctness of vision and hearing, are sometimes observed.

Associated with the above symptoms, a more or less decided febrile movement is frequently observed. This is manifested by elevation of temperature and increased frequency of the pulse. This eruption-fever of syphilis has been compared with the febrile symptoms of the acute exanthemata, but it differs from the latter in having a longer period of incubation and a shorter prodromal stage. The febrile symptoms are rarely severe; in some cases they are continuous, in others somewhat remittent. They precede by a few days the appearance of the eruption, and generally subside when the latter is fully developed. The increase in temperature is accompanied by an aggravation of some of the symptoms previously mentioned; neuralgic pains in the head and limbs are generally complained of. Exacerbations take place towards evening. In some cases the symptoms resemble those of intermittent fever, but the cold stage of the latter is slightly marked or represented only by transient chilliness. The erythematous syphilitic eruptions are those which are associated with the most marked febrile symptoms. On the other hand, the development of the papular forms is not accompanied by fever. Pain and swelling in certain joints, coexisting with the febrile symptoms, may cause the affection to be mistaken for acute rheumatism, and a sudden outbreak of the eruption with high febrile symptoms may simulate an attack of measles, but in both cases the subsequent course of the symptoms will indicate the nature of the complaint.

When the fever assumes an intermittent form the symptoms may be attributed to the influence of malaria. Such a mistake could scarcely occur if proper inquiry were made into the history of the case. An instance of this kind, however, came under my notice some time

ago. A gentleman consulted me for soft sores on the penis; these healed up in about three weeks. Two months afterwards he contracted an indurated sore, for which mercury was at once administered. After an interval of some weeks he was seen by another surgeon, who discovered febrile symptoms, which he was led to suppose were of malarious origin, the patient having spent some time in a malarious district during the previous year. This diagnosis was confirmed by two celebrated physicians who were called into consultation. Quinine was administered for two months without effect, and the patient was advised to go to a German bathing-place. While there several lumps appeared on his forehead. He consulted me on his return, and I found several well-marked nodes on the forehead and vertex, and a rupial rash over the body generally. He complained of acute pain in the shins and head, and of pains like those of chronic rheumatism in other parts. He was much reduced in flesh and strength; there was profuse sweating at night and other indications of debility. I prescribed cod-liver oil, and the iodide of potassium, gr. v, every four hours, with very satisfactory results.

Febrile symptoms also accompany later stages of syphilis, *e. g.* the development of pustular eruptions and various syphilitic affections of the mucous membranes. Syphilitic erythema of the fauces when severe is attended with marked elevation of temperature. Syphilitic fever occurs more frequently in females than in males. When mercury is administered the temperature soon becomes reduced to the normal degree and sometimes falls below it. Iodide of potassium appears to produce no change at first, but when given for some time the temperature is said to rise, but afterwards to fall below the normal standard.

The febrile symptoms sometimes continue after the appearance of various eruptions on the skin and mucous membranes. In such cases they are generally characterised by their marked severity, and accompany every fresh

manifestation of the disease. A decided rigor lasting perhaps an hour may occur every evening, and be followed by high temperature and perspiration. These cease after a few days and reappear simultaneously with fresh eruption on the skin or in the throat. Gastric disturbances and signs of nervous derangement are occasionally superadded. There is considerable difference of opinion as to the frequency with which syphilitic fever occurs. It is probable that there is an elevation of temperature in all cases, but that it is often so slight as to be overlooked. In nineteen cases which were closely observed, only in one could no febrile movement be detected; in twelve the highest temperature noticed was 100·4°; in five, 102·2°; and in one a temperature of 104° was reached.

The interval that exists between the reception of the contagion and the appearance of an eruption on the skin or mucous membrane may be lengthened or abbreviated. When mercury is given for the primary induration, and the patient can be placed under favorable circumstances, the subsequent appearances are retarded and their intensity in many cases is much reduced. On the other hand, if mercury be withheld, and the patient's circumstances be unfavorable, the secondary symptoms are earlier in their appearance and more severe in their character.

Syphilitic affections of the skin may be classified in various ways. There are, in the first place, two principal groups:

I. The exanthematous syphilides, connected with the earlier stages of the disease.

II. The later or tertiary affections.

The first group comprises the erythematous, the papular, the pustular, and the squamous syphilides. The second includes the tubercular, ulcerative, and the gummatous lesions.

No part of the skin is exempt from the manifestations of syphilis, but certain eruptions appear to select certain parts of the cutaneous surface. Thus syphilitic erythema

generally commences on the skin of the abdomen, less commonly on the thorax, face, and backs of the hands. The papular syphilide affects the sides of the trunk, the abdomen, and the back. The pustular forms are generally most marked on the scalp and face, and the squamous affections occur most frequently on the elbows and knees, on the palms of the hand and soles of the feet.

Syphilitic affections of the skin present certain peculiarities common to the entire class, and which serve in a measure to distinguish them from other cutaneous eruptions. The peculiarity to which most importance has been attached is their *colour*. This, in the majority of cases, is first pinkish and soon brownish-red, and afterwards of a more or less decided coppery hue. The primary redness is less marked than that of the ordinary exanthemata. It is most distinct on the dependent parts of the body and in recent and superficial eruptions. The peculiar coppery colour of syphilitic skin diseases was recognised as far back as the sixteenth century, and was regarded as a pathognomonic sign. It is especially characteristic of the later and more severe eruptions, which develop slowly and affect the deeper structures of the skin. As the eruption subsides, the coppery tinge fades and passes into a yellowish-brown or grey discoloration. On the other hand, it sometimes happens that disappearance of the eruption is followed by loss of the normal pigment, and the substitution of white patches. The coppery colour is due to dilatation of capillaries and to minute extravasations of blood, and subsequent metamorphosis of the colouring matter; it is especially marked in syphilitic eruptions occurring in debilitated subjects. In such patients large coppery-red stains are often seen on the lower extremities. The scars of syphilitic ulcers also assume this colour.

Polymorphism, as it is termed, is another peculiarity of these affections, that is to say, several different forms of eruption often occur simultaneously on the same patient; the new forms showing themselves before the older ones

have disappeared. Thus, roseolous patches often coexist with papular and pustular eruptions.

A third peculiarity of syphilitic eruptions is their tendency to assume a *circular* or *curved arrangement*. This latter is, however, by no means general, and it is more marked in relapses than in the earlier manifestations. It is also more characteristic of the papular and tubercular eruptions.

The *scales* which become detached from the milder syphilitic eruptions are thin, and of a dull whitish or whitish-brown colour. They appear first in the centre of the efflorescence, and never at its periphery, and they are not detached in such quantities as in ordinary psoriasis. The *crusts* of syphilitic pustular, and ulcerative affections are formed by the desiccation of serum, pus and *débris* of tissue. They are yellowish-brown or dark brown in colour, thick, and dry. The thickness decreases from the centre towards the periphery, where the crusts are surrounded by a brownish-red, firm circle of infiltration. Those of syphilitic rupia are decidedly vaulted or conical ; they form several layers and are very dark in colour.

Absence of itching or pain is a negative characteristic of syphilitic eruptions. Some amount of itching may, however, be complained of during the acute stage of a copious eruption and also when desquamation takes place, and when the scalp or chin is affected. Moist papules near the anus and on the genital organs cause more or less irritation. Syphilitic skin-eruptions are rarely painful unless ulceration be present.

The *chronic course* of these eruptions, their *tendency to relapse*, and the *symmetrical distribution* of the earlier lesions are the remaining peculiarities which require notice.

Roseola syphilitica (erythema syphiliticum, syphilis cutanea maculosa) is the most common form of syphilitic affections of the skin, and, as a general rule, the first of these manifestations. It consists of irregularly rounded spots, about a third of an inch in diameter and varying in colour from a pale rose-pink to a purple or reddish-brown

hue; the eruption being often preceded by febrile symptoms and pains resembling those of rheumatism. The spots are sometimes confluent, and they do not all appear at the same time, but gradually, so that a week or ten days may elapse before the eruption is at its height. Syphilitic roseola nearly always begins on the abdomen, then shows itself on the chest and arms, and lastly on the legs. The face is rarely attacked, except in patients, such as hall-porters and others, who are particularly exposed to winds and draughts. In warm climates, the roseolar eruption, wherever it appears, is always very distinctly marked. Most of the spots are on the same level with the skin, but some are often more or less elevated. In the latter case they resemble urticaria. If left to itself, the eruption lasts for some weeks, assuming a darker hue, and then gradually fading. Owing to the gradual development of the eruption, fresh red spots are often seen co-existing with others of darker and lighter shades. The roseola is often the only cutaneous affection that appears in the course of syphilis. It may recur more than once, the eruption in that case being less copious, paler in colour, and more prone to assume a circular form. A roseolous affection of the mucous membrane of the soft palate and tongue is occasionally observed.

Syphilitic roseola may be mistaken for other cutaneous eruptions, *e.g.* the rash of measles or of scarlatina, simple erythema, and eruptions following the use of certain drugs. The absence of catarrhal symptoms, the gradual development of the eruption and the rapid subsidence of the febrile movement will serve to distinguish it from the two first; but in a slight attack of measles the eruption may closely resemble that of syphilitic roseola. In the latter, however, careful examination will always detect *induration of the lymphatic glands* and *some remains of the primary lesion*. In scarlet fever the face is seldom free from the eruption; in measles, the eruption almost invariably appears first on the face. The use of copaiba, cubebs and other similar drugs gives rise in some patients to eruptions

more or less resembling syphilitic roseola. The occurrence of these eruptions tended to support the old view of the identity of syphilis and gonorrhœa. The *roseola balsamica*, as it has been called, is more like the rash of urticaria; it is accompanied by an intense itching and burning sensation, and by symptoms of gastric disturbance. Many of the patches are large and œdematous, and they are apt to become confluent where the skin is subjected to pressure. The face is affected, and the eruption shows a preference for the neighbourhood of the joints. An erythematous eruption due to the use of mercury has been observed in a few cases. It takes the form of a confluent red efflorescence, covering large portions of the integument. In a case observed by Zeissl, the eruption appeared on the flexor surfaces of the forearms and thighs, and on the trunk. The patient was being treated for an indurated sore, but he asserted that a similar eruption had in his case invariably followed the use of small doses of mercury when given for other affections. In two cases observed by Dr. Pereira, the diffused redness was due to minute and pellucid vesicles which gave a sensation of roughness to the touch. The diagnosis is, of course, easy—syphilitic roseola tends to disappear when mercury is given. The remains of syphilitic roseola may closely resemble the eruption of pityriasis versicolor. The latter is, however, more scaly in character, and the colour is confined to the superficial layers of epithelium. When the scales are removed, the skin beneath them is normal in colour.

The Papular Syphilitic Eruptions consist of round, sharply defined, brownish-red elevations, smooth and firm to the touch and unattended by itching or pain. They vary very much in size; the smallest are about equal to a pin's head, while the largest measure half-an-inch or more in diameter. The papules are sometimes converted into pustules, but the eruption generally preserves its papular character throughout its course, and terminates by resolution; small depressions remaining for some time upon the skin.

Although papules of various sizes frequently occur simultaneously on the same patient, it often happens that a larger or a smaller variety predominates, and hence two forms of the affection have been described; these are designated the *lenticular* and the *miliary* varieties.

The *lenticular syphilide* consists of papules, conical or semi-globular in form, and from an eighth to half an inch in diameter. The smaller kinds involve the superficial part of the corium and the papillary layer, while the larger ones extend into the connective tissue. The papules appear in groups, either on roseolous patches or on portions of skin previously unaffected. They either attain their full size soon after their appearance or continue to increase in circumference. They are firm to the touch, brownish-red in colour, sharply defined, and their surface is smooth and glossy. As a general rule, no definite arrangement can be detected, but the papules are sometimes arranged in groups and circles or in curved lines. Their most common seats are the shoulders, the abdomen, the sides of the trunk, and the back. They are also seen on the forehead, at the margin of the hairy scalp, about the nostrils and mouth, on the genital organs, and on the limbs. One form of the so-called "corona Veneris" is due to a papular eruption on the forehead. The eruption pursues a chronic course; fresh crops of papules often appear while others are undergoing resolution. This latter process takes place gradually; the papule diminishes in size; its surface, previously tense, becomes wrinkled and slight exfoliation occurs, commencing from the centre of the papule. Resolution goes on, the projection becomes converted into a slight depression, brownish-red in colour, and covered by minute epithelial scales. These depressions remain visible for some time. In some cases the desquamative process is more marked and rapid, and the eruption in this stage is of a scaly character. This condition is frequently seen on the palms and soles. As a result also of friction, scales and crusts are sometimes seen covering the papules on other parts. Unless the

papule has been completely rubbed off, in which case the surface will be covered with a layer of blood, a distinct circle of infiltration will always be seen around the scales. In the case of large papules, half an inch or more in diameter, the centre becomes whitish and slightly depressed, while the surrounding part is raised, brownish-red in colour, and firm to the touch. It sometimes happens that a papule becomes converted into a vesicle or series of vesicles. In the latter case the eruption may resemble herpes circinnatus, which, however, is devoid of a papular base and of a whitish patch of integument as a centre.

Syphilitic papules are the result of a somewhat sharply-defined cellular infiltration of the papillary layer and superficial part of the corium. The cells are of various kinds; some resemble white blood-corpuscles and their nuclei, while others are much larger and elongated in form. The process is confined to the infiltrated spot; there is no œdema of the surrounding portions of the corium.

The lenticular syphilide is often associated with roseolous and pustular eruptions, and the papules are generally found in various stages of development, some being in process of formation, others mature, and others undergoing resolution. These varying appearances are due to the fact that the eruption ordinarily occurs in successive crops, each crop remaining for several weeks. They are never accompanied by itching. Relapses are common, and may occur repeatedly in the same patient. When the interval between its appearance and the primary lesion is considerable, the eruption is prone to affect special portions of the surface, *e.g.* the elbows and knees, and to assume circular or more or less curved forms. The limitation to certain parts is characteristic of an old-standing syphilitic affection; on the other hand, in recent cases, the eruption is more or less diffused. The lenticular syphilide is sometimes the first cutaneous manifestation.

There are two important modifications of the syphilitic papular eruption. These are mainly due to the *locality* in which the papules are developed. The first of these modifications constitutes *syphilitic psoriasis of the palms and soles*, the second gives rise to the so-called *broad condylomata* or *mucous patches*.

Syphilitic psoriasis of the palms and soles is due to the development of papules on these parts, which, as a general rule, are unaffected in ordinary psoriasis. The papules appear in the hollows of the palms and on the soles of the feet, especially towards the inner border. They are brownish-red in colour, and project but little, owing to the thickness of the epithelium. They sometimes occur in common with a general eruption, but more frequently after the latter has disappeared. Their course may be similar to that observed on other parts of the body, or of a much more chronic character. The desquamation in the latter class of cases is a marked feature; and hence the scaly appearance of the eruption in its later stages. The papules vary in number, sometimes there are only a few on each palm; in other cases they are much more numerous, and form by confluence circular patches, which are bounded by a dark-red margin of infiltration, and covered by dry and cracked epithelial scales. When the papules are situated between the toes or in the furrows of the hand, they are often converted into fissures or *rhagades*. In severe and chronic cases, the eruption extends over the whole of the palm and the palmar surface of the fingers; it may even extend to their dorsal surfaces. The entire palm may be covered with scales, while at the sides and towards the wrist, papules are seen in various stages of development. The extension of the eruption to the nails causes them to become fissured and brittle. A very severe form of the affection has been termed *psoriasis cornea*. The palms and soles are covered by dense hard layers of epidermis, marked by numerous deep clefts radiating from the centre. This condition may exist for several years, and finally sub-

side under local and general treatment. The skin, however, seldom regains its normal colour; brownish-red discolorations generally remain. The severer forms are more common on the soles than on the palms. Relapses are frequently seen.

The diagnosis of the milder forms of psoriasis palmaris is for the most part easy. The existence of separate papules furnishes the clue to the nature of the case. In chronic and severe cases, the appearances may closely resemble those of chronic eczema or of ordinary psoriasis, but the history of the case and the co-existence of other symptoms will aid in determining the diagnosis.

The second modification of the syphilitic papule is the *flat or broad condyloma* (also called mucous papules, moist papules, &c.). This term is applied to lesions peculiar to syphilis, and consisting of roundish elevations, varying much in size and situated on mucous membranes, and on portions of the skin where neighbouring surfaces come into contact with each other and are kept moist by perspiration or other secretions. These condylomata are most frequently found on the female genital organs and in both sexes around the margin of the anus, on the nates and in the groins, about the umbilicus, between the toes, and on the breast in the female, &c. Broad condylomata vary in size; the smallest are less than a line in diameter, while the larger ones (formed by the confluence of many papules) measure one or two inches. They are firm and elastic to the touch, and brownish-red or grey in colour. The surface may be smooth or nodulated, and is either dry or covered with a moist offensive discharge.

These growths are developed from ordinary syphilitic papules, under the influence of warmth and moisture. The epidermis becomes softened and detached, and the eruption assumes a reddish moist appearance. Continuous irritation leads to the enlargement of the papules, laterally and perpendicularly, and to increase in their number, and their confluence results in the production of large patches. Neighbouring portions of the integument, in contact with

the papules and moistened by their secretion, are very liable to become the seat of similar growths. Hence it is that if neglected these condylomata rapidly spread and multiply on the vulva, perineum, etc. The multiplication of condylomata may also be due to the general infection, the secretion acting as an irritant upon papillæ already charged with syphilitic blood. Ordinary lenticular papules are often seen on the integument immediately surrounding a condylomatous patch, and these are especially prone to increase and spread. Ulceration often takes place on the surface, as a result of friction ; and it sometimes happens that elongated warty excrescences make their appearance. These are distinguished from the acuminate growths, of a non-syphilitic character, by the fact that they grow from an infiltrated base, whereas the pointed excrescences are seated upon normal skin. The condylomata are chronic in their course ; under proper treatment they diminish in size, become dry, and finally disappear, leaving traces behind them in the form of brown discolorations.

With regard to their structure, broad condylomata are the result of circumscribed cellular infiltration of the papillary layer and of the corium. The papillæ are considerably enlarged, often branched and presenting club-shaped endings. These latter are exposed when the epithelium becomes detached.

The diagnosis is, for the most part, easily made ; especially when the growths occur on the genital organs or parts adjoining. They are to be distinguished from patches of eczema by their papular form. The so-called pointed condylomata are not due to syphilis, but to the irritation set up by various non-specific secretions.

Broad condylomata are positive signs of constitutional syphilis, and in some cases they appear as the primary manifestation of the disease. The discharges from these growths are of a highly contagious nature, and when inoculated upon a non-syphilitic individual give rise to a papule or condyloma, which is sooner or later followed by glandular swelling and induration, roseola, and other

"secondary" symptoms. No ulcer necessarily makes its appearance, and the papule must therefore be regarded as the primary lesion. On the other hand, a chancre may become transformed into a condyloma, as seen especially on mucous membranes. In infants, the subjects of hereditary syphilis, condylomata are the most frequent of all the cutaneous manifestations.

The miliary syphilide (lichen syphiliticus, syphilis cutanea miliaris) consists of very small papules, brownish-red in colour, very slightly raised, and either freely distributed over the surface, or else collected in groups forming segments of circles or circular patches or curves of various forms. This eruption is often connected with the hair-follicles, and, as a result of exudation, the papules may become converted into vesicles and subsequently into minute pustules. It often happens that the eruption is very rapidly developed and is attended by marked febrile symptoms. Certain parts, viz. the back, the flexor aspects of the joints, and the genital organs are especially liable to be affected. This form is rarely seen on the palms and soles, which, however, are sometimes affected with the "psoriasis" already described, while the miliary syphilide is present on other parts. The miliary papules belong to the early stages of syphilis, but they sometimes appear later on, and one or more relapses may occur. In the latter case, the eruption is generally confined to certain parts of the body, and the papules appear in more or less distinct groups. Under any circumstances the course of the eruption is generally chronic. In severe cases tiny depressions, indicating atrophy of the corium, are likely to remain upon the skin.

The diagnosis of the acute papular eruptions is, for the most part, easily made if their special characteristics be borne in mind. Other symptoms, especially glandular swelling and induration, will be found on examination. In chronic cases, however, the eruption may resemble that of psoriasis simplex, and forms of eczema and herpes. In the syphilitic eruption distinct papules can almost always

be discovered. In simple psoriasis, the scales are lighter in colour and more plentiful; the patches are not characterised by any uniformity; and the patients exhibit no sign of constitutional disorder. Herpetic and eczematous eruptions are distinguished by their vesicular character, the comparative rapidity of their course, and the color of the surrounding integument, which is paler and less infiltrated than in syphilitic eruption. Non-specific forms of lichen are always accompanied by more or less itching.

In addition to the so-called "psoriasis" of the hands and feet already described, a *squamous* syphilide is mentioned by some authors. This appearance is, however, due to the changes which a papular eruption sometimes undergoes, and especially when the cutis is considerably infiltrated. The desquamation which then occurs more or less resembles that of true psoriasis. The trunk, the forehead, the scrotum and penis, the mons Veneris, and the labia, are the most frequent seats of an eruption of this kind. The spots are either disseminated or confluent, not very prominent, of a reddish-brown colour, and covered with whitish or yellowish pellicles or scales. In certain spots, such as the hairy scalp, the scales sometimes amount to crusts and are arranged in a circular or semi-circular form. An eruption presenting some of these appearances may be mistaken for psoriasis vulgaris. In the latter, however, the scales are far more abundant, are drier and whiter and much more easily separable; the eruption most commonly appears on the extensor aspects of the elbows and knees, and is attended with itching. In so-called syphilitic psoriasis the scales are less abundant, and the eruption is not spread over an extensive surface and it may be found on any part of the body. Other indications of syphilis, such as glandular induration and loss of hair, are always present, and the patients are usually debilitated and anæmic.

The Pustular Syphilides are to be regarded as an advanced stage of the papular forms. The development of pustules from papules is sometimes evident; but in other cases the pus is so rapidly formed that the papular stage

can scarcely be distinguished. Pustular eruptions are less frequent than the roseolous and papular forms; they belong to the secondary and later stages of syphilis, and are usually indicative of deterioration of the general health. The pustules may be few or many, and they may be scattered over the body, or may appear in groups and in particular regions. They are most frequently seen on the scalp and face. Relapses are common. After continuing for some time, the pustules become converted into dry crusts which fall off, exposing papular elevations, or ulcers in severe cases. The pustular syphilides are generally associated with marked glandular swelling and induration, and with affections of the eyes, bones and testicles. Rheumatic pains and various indications of ill health frequently coexist. As the general health improves, the pustules cease to appear, or the eruption becomes more and more papular in its character.

The group of pustular syphilides includes several varieties which have been variously classified. The simplest classification is that which is based upon the size of the pustules. The *first* division includes those forms in which the pustules are comparatively large, and more or less resemble acne, varicella, impetigo, and ecthyma. A *second* division comprises the miliary pustular eruptions, which are to be regarded as an advanced stage of the miliary papules.

(1) *The acne-form syphilide* consists of small pointed or rounded pustules, the size of a small lentil, and having a more or less distinctly papular, bright-red base. They are usually seen on the hairy scalp, the forehead, back of neck, shoulders, loins, and gluteal regions. The eruption may assume either a subacute or a chronic character; in the former case the pustules are very rapidly formed and appear in great numbers, and their development is accompanied by fever and other symptoms already described. In the chronic cases, the eruption is at first more decidedly papular; the apices of the papules being subsequently converted into pustules. These are less numerous and

appear in successive crops, which are generally confined to special regions of the body. After a few days, the pustules appear less prominent, and their contents become converted into yellowish and brownish crusts. These fall off, leaving a small papule or a minute depression, or in severe cases a superficial ulcer. The eruption may last for several weeks or months, and relapses often occur. In these, however, the pustules are generally larger and resemble those of ecthyma. Other symptoms often coexist with an eruption of syphilitic acne. If it occurs at an early period, there is certain to be glandular enlargement, and traces of roseola and papular eruptions will, in all probability, be present. The later eruptions of acne are associated with tubercular and gummatous lesions, iritis, diseases of the bones, &c.

(2) *The variola-form syphilide.*—The pustules in this form somewhat resemble those of chicken-pox and small-pox. They are at first semiglobular and afterwards become flattened or even depressed at the centre. They are usually large, sometimes attaining the size of a pea. Their contents, at first clear, gradually become opaque and subsequently form brown or blackish crusts. Each pustule is surrounded by a coppery-red areola. This form is seen both in acquired and in congenital syphilis. In the acquired disease the pustules occasionally become confluent. They are, however, usually scattered; and are most frequently found on the forehead and face, on the anterior aspect of the trunk, and in the groins. They sometimes accompany, but more often follow, an eruption of roseola. Their appearance is seldom attended by any febrile symptoms. The eruption is spread over a period varying from six weeks to as many months, according as it appears in one or more crops. When the crusts fall off, dark-red spots remain for some time. The confluent variety has been described as "syphilitic pemphigus," and in a few rare cases an eruption of this kind has been noticed on the palms of the hands and dorsal surface of the fingers; the pustules closely resembling

those of varicella and small-pox. The appearance of this pustular syphilide usually indicates a somewhat severe form of the original disease.

The diagnosis of this form of syphilide is for the most part easily made ; varicella and small-pox being the only diseases characterised by a similar eruption. The syphilitic pustules are more slowly developed, are less numerous, and their eruption is ordinarily unaccompanied by febrile symptoms. A papular eruption, which forms the starting point of the pustules, always coexists. Pain in the back, vomiting, and other indications of an acute affection are invariably absent. The history of the case and the presence of other symptoms of syphilis will establish the diagnosis.

(3) *Syphilitic impetigo* occurs in the form of small pustules, sometimes isolated and sometimes forming patches of variable size. They begin as circumscribed dark-red spots, as large as a lentil or pea. The papules are soon converted into pustules which, in turn, rapidly become dried up, and form yellowish or brown crusts. The eruption often becomes confluent, and is most frequently found upon the forehead, scalp, and chin, about the mouth and nose, and in the axillæ. It is less frequently seen on the trunk and limbs. A coppery-red areola surrounds each pustule or patch. This form is never seen at an early period of the disease, *i.e.* within less than six months after the appearance of the primary sore. It belongs rather to the second or third year, and this late form of the eruption is usually confluent and confined to certain parts of the body. In severe and neglected cases, the separation of the crusts sometimes exposes patches of ulceration, mostly of a superficial character ; and the destructive process occasionally spreads in a serpiginous manner. Syphilitic impetigo is a chronic affection, always lasting for some months. The confluent form is the more obstinate ; it occurs in cachectic subjects and indicates grave disorder of nutrition. Scrofulous impetigo closely resembles the syphilitic eruption. In the latter, however, the

coppery-red areola is a distinguishing characteristic. Simple impetigo is attended by heat and itching of the skin, and the development of the pustules is more rapid and uniform.

(4) *Syphilitic ecthyma* is a still more serious form of disease; the pustules are larger than those of impetigo, and are more prone to be attended by ulceration. There are two varieties of this eruption: superficial and deep. The pustules vary in size, the largest measure half an inch in diameter; they are either disseminated or collected together in groups. They are most frequently situated on the lower extremities and on the scalp. The pustules are rapidly developed upon dark-red elevated spots, and their contents are often dark-coloured, owing to admixture of blood. Desiccation takes place, and dark crusts are formed, under which suppuration progresses until the crusts become detached. Roundish ulcers are then seen involving the surface of the corium. In the deep form of ecthyma the crusts are composed of several strata, successive layers being added as the suppuration beneath continues. The crust thus becomes larger and thicker, and either completely covers the ulcer, or is surrounded by a margin of ulceration. Its detachment reveals more or less destruction of the corium. Confluence of the pustules gives rise to large and irregularly-shaped ulcers, which, in severe and neglected cases, continue to increase after the crusts have fallen off. These ulcers are sometimes very obstinate, and they leave indelible and depressed cicatrices which are at first brownish-red and subsequently become white and shining. The occurrence of this form of ecthyma indicates marked deterioration of the general health; the resulting suppuration leads to further exhaustion and is often attended by remittent febrile symptoms (see p. 93). Syphilitic ecthyma rarely appears before the sixth month after infection; it is generally associated with condylomata, with affections of the bones and periosteum, iritis, &c. Relapses often occur.

With regard to diagnosis, the history and co-existing

symptoms must be taken into consideration. The local appearances closely resemble those of non-specific ecthyma occurring in scrofulous subjects. The occurrence of the eruption on the face as well as on the limbs points to a syphilitic origin.

The *miliary pustular syphilide* is to be regarded as an advanced stage of syphilitic lichen. Only a portion of the infiltration to which the papules are due becomes converted into pus, and the pustules are therefore minute and project but slightly above the level of the skin. A hair is often found in the apex of each pustule. Other forms of eruption, especially papules of various sizes, generally co-exist. The pustules are usually arranged in a more or less circular form or in irregular patches. They may be found on any part of the body or scattered all over the surface, but the pustules are best developed on the back. When confined to certain spots, the forehead and neck, the mouth and nose and the neighbourhood of the joints, are the parts most often affected. The development of the pustules is sometimes attended by febrile symptoms ; it may go on for several weeks or even months, the desiccation of one set of pustules being accompanied by the appearance of fresh crops. After complete disappearance, relapses are prone to occur, especially in debilitated subjects. The course of the eruption is always very tedious, and obstinate as regards treatment.

It may be sometimes difficult to distinguish the miliary pustular syphilide from ordinary acne and from lichen in scrofulous subjects. Other symptoms, however, and other forms of eruption always accompany the first-named affection. There are more decided signs of inflammation of the skin in ordinary acne ; the surrounding cutis is often hard, swollen and painful. In eruptions of lichen, any fluid that exudes is more serous in character.

The affections hitherto described belong, as a general rule, to the *secondary* stages of syphilis ; but it must be remembered that many of them also occur in the form of

relapses, contemporaneously with symptoms of the tertiary stage. It now remains to consider the *tertiary cutaneous lesions*, which are generally of a far more serious type, and are developed in a slower and more gradual manner (see page 22).

Gummous and Tuberculous Syphilides (syphilis cutanea nodosa, gumma syphiliticum, syphiloma). These consist of formations peculiar to syphilis, and found in the cutaneous, subcutaneous and submucous tissues, the muscles, the bones, the liver, the brain and other internal organs. Gummata occur in the form of nodules or tumours, varying in size from that of a pea to that of a small egg. Those connected with the skin are circumscribed, and are either superficial and project above the surface, or are more deeply seated and flattened, and form no visible tumour. They can, however, often be felt and isolated by the fingers. Superficial gummata are firm and elastic to the touch, roundish in form and either globular or more or less flattened. When the nodules are large, they are generally few in number, but small gummata are often very numerous. Their place of origin is either the papillary layer of the corium, whence they extend into the subcutaneous connective tissue, or the deeper layers, their further development taking place towards the surface. Gummata connected with the skin have therefore been divided into two classes, cutaneous and subcutaneous.

The cutaneous gummata form well-defined nodules from one-sixth of an inch to an inch in diameter, brownish-red in colour, spherical in shape and projecting above the surface of the skin. The large ones extend into the subcutaneous connective tissue. They may occur in any part of the body, but they are usually found in distinct localities, as the face, scalp, shoulders, and legs. They are sometimes arranged in groups, more or less circular in form, with a large nodule as a centre. They are firm and elastic to the touch, and somewhat painful on pressure. They appear to form part of the corium.

The subcutaneous gummata are tumours formed in the

connective tissue. They vary in size, are firm and elastic to the touch, and at first they neither project above the surface nor are they attached to the skin which is readily movable over them. As they increase in size they become more or less prominent, and adherent to the skin. They also lose their spherical form and are apt to become flattened and less prominent.

When a gummatous tumour has reached a certain size it usually remains unaltered for an indefinite period; and then either undergoes gradual absorption and disappears, or disintegration takes place and results in the formation of an ulcer. Resolution begins in the centre, which becomes soft and depressed. The softening extends, the tumour becomes less and less perceptible, and finally disappears. When disintegration occurs, the skin over the centre of the tumour becomes red and sooner or later gives way, and a little sero-purulent viscid fluid escapes. There is no abundant discharge as from an ordinary abscess. The walls of the cavity are firm and resistant, and the cavity itself is large compared with the opening, which shows no signs of closing until the entire mass is softened and discharged. These processes go on very slowly; when they are completed the cavity is filled up by granulations, and a cicatrix forms, which is more or less depressed, according as the nodule was more or less deeply placed. The cicatrix is white and circular and is often adherent to the parts beneath, especially in the case of nodules situated over a bone. Sometimes several openings form over a large gumma.

Minute Anatomy.—The following account of the minute anatomy of these nodules is based mainly upon the description given by Cornil. A gumma or nodule is soft and yielding to the touch, is greyish-red in colour, and contains a small quantity of mucous or gummy fluid. Although these growths are the most characteristic productions of syphilis, no special cellular elements have as yet been discovered in connection with them. In the first stage, the skin covering the nodule is slightly elevated, but is

not implicated in the growth (Cornil does not recognise the *cutaneous* gummata, or rather he describes the nodules which involve the skin alone as *tubercles*). The new growth commences in the adipose tissue, and invades all its deeper portions as well as the loose subcutaneous connective tissue. It is at first limited and distinct, though it gradually merges into the healthy tissue. The growth consists of masses of round cells, which surround the connective tissue bundles, the ducts of the glands, the adipose cells, and the vessels. The cellular growth thus infiltrates all the subcutaneous tissues, with the exception of the elastic fibres. The cells are also found in the interior of the capillaries and small veins, many of which are filled with coagula caused by obstruction to the circulation. When softening takes place the cellular elements become granular and fatty, and the tumour becomes less dense and finally disappears. If the superficial layers of the skin are infiltrated, perforation is very apt to take place. These gummata rarely occur before the second or third year. They may appear at any subsequent period.

The Ulcerating Syphilide (syphilis cutanea ulcerosa).—Syphilitic cutaneous and subcutaneous infiltrations, giving rise to the various forms of papules and nodules already described, may terminate either in resolution or in processes of disintegration in which the integument becomes involved. In the latter case an ulcer results. Ulceration, therefore, is to be regarded as a phase of the papular, pustular, and gummatous or nodular formations. These ulcers are more or less circular in form, and are further characterised by their sharply-defined infiltrated margin, which is often undermined. A yellow or grey exudation adheres to the floor and tends to become dry and form crusts. The secretion is usually abundant, and inasmuch as the healing process is very slow, these crusts are often found to be composed of layers more or less thick and numerous.

The extent to which the ulcerative process advances is

influenced by the course of the infiltration of which it is a consequence. Once set up, the disintegration spreads until the whole of the new formation is involved. It then ceases; but if the infiltration advances, the ulceration follows in its train. Hence it happens that these ulcers are often serpiginous. They begin in a single nodule, and are at first circular; if adjacent nodules are the seat of similar processes, the ulceration spreads from one to the other, until large tracts of skin are involved. Such ulcers often have a reniform shape, owing to the progress of the infiltration at one portion of the circumference. At the part where the infiltration ceases cicatrisation takes place.

The appearances are somewhat different in the case of ulcers the result of disintegration of the deeper or subcutaneous gummata. Here the process is more deeply seated, and, unless large portions of the skin are implicated, the first appearances are those of an abscess rather than of an ulcer. A small circular opening leads into a cavity, the size of which depends upon that of the gumma. The opening continues to discharge semi-purulent viscid matter, until the whole of the infiltration is removed. If the gumma be large, there may be several openings, separated from each other by narrow and reddened strips of integument; and if these become destroyed, a large irregularly shaped ulcer is the result. Such ulcers may remain in an indolent condition for some months, no reparative process taking place until the infiltration is removed. When granulations are formed, they sometimes become exuberant and thus retard cicatrisation. The cicatrices are at first livid, but gradually become paler, and are surrounded by a brownish or coppery areola. When some time has elapsed, they become white, smooth and dry, and can be easily distinguished from the surrounding skin. Little if any contraction takes place, so that deformity is rarely produced. The cicatrices, however, are very apt to give way and to become the seat of fresh ulceration. When the ulceration has been seated

over a bone, the cicatrix becomes adherent to the periosteum.

The so-called *rupia syphilitica* depends upon a process of ulceration similar to that just described, but the secretions from the ulcer rapidly become dry and form adherent crusts, while the infiltration extends from the margin and is succeeded by disintegration and ulceration. The crusts of rupia are thus formed. There is first an isolated nodule, the centre of which ulcerates; the pus dries up and forms a dirty yellowish-brown crust, which again is surrounded by a margin of gummatous infiltration. A second gummatous zone is formed whilst the first is undergoing molecular disintegration. The central crust is somewhat raised and increased in thickness by the newly formed pus, and the new zone forms a yellowish soft crust which surrounds the central portion. A third gummatous zone is superadded which in its turn gives way and forms a crust. The ulcer is thus covered by a conical laminated mass, the central and older portion of which is thick, dry and brownish-black in colour; the peripheral portions being softer, thinner and lighter in colour, and surrounded by a margin of infiltration. There is nothing peculiar to syphilis in the appearance of these crusts; a similar process may sometimes be observed in non-syphilitic eruptions. When the crusts are removed, as by poulticing, an ulcer remains with a gummatous infiltration as its base. It sometimes happens that before the skin covering a nodule gives way, a group of vesicles appears in the form of a circle. Their contents become purulent and subsequently dry, and the crusts thus formed adhere to the central crust. This eruption has been described as a form of pemphigus. Rupial ulceration is a sign of profound cachexia; it is sometimes a forerunner of cerebral and spinal symptoms (see pages 26 and 69).

Syphilitic ulceration due to gummatous infiltration presents certain peculiarities connected with the places in which it appears. The leg is more often affected than any other part of the body. Next in order of frequency come

the forearm and thigh. The neighbourhood of the joints is particularly liable to be attacked; but in these parts the ulceration is generally of a superficial character, being due to cutaneous gummata. The disintegration of subcutaneous gummata, which are most common in the middle third of the leg, gives rise to much more serious ulceration, often of a very chronic character, and complicated by new gummatous formations, erysipelas, periostitis, &c. In severe cases, large portions of the surface of the leg may be covered with nodules or tubercles in various stages, some recent, others ulcerating or in process of cicatrisation, while the skin between them is thickened and inflamed. The bone becomes enlarged, either uniformly or as a result of distinct out-growths. A condition resembling elephantiasis may become developed in course of time.

Gummatous ulcers of the arm and forearm are less common, but they are sometimes seen in the neighbourhood of the elbow-joint and on the back of the hand. The ulceration is for the most part superficial, and the cicatrices do not interfere with the movements of the joints. Subcutaneous gummata on the forearm may, however, give rise to deep-seated ulceration.

The face and scalp are often the seat of syphilitic ulceration, consequent upon pustular eruptions or the disintegration of cutaneous and subcutaneous gummata. Ulcers may occur on any part of the face, but the nose, forehead, and region of the mouth are most commonly attacked. Nodules or tubercles of a brownish-red colour, and grouped together in various ways, appear on the sides of the nose and adjoining portions of the face. Suppuration takes place and ulcers form, some of which may penetrate deeply and destroy portions of the nasal cartilages, or even the whole of these structures. If the mucous membrane of the nose be at the same time affected, the destruction is, of course, more extensive and rapid. The bony framework of the nose is apt to become involved and necrosis results.

Gummata of the scalp give rise, by their disintegration,

to ulcers of various forms, at first somewhat circular, but often becoming reniform. These are generally arranged in groups, and as their edges are more or less undermined (a condition characteristic of syphilitic ulceration), it sometimes happens that adjacent ulcers communicate with each other beneath the strips of integument. When these latter give way the ulcers become confluent. Their secretion forms brown crusts, which extend beyond the edges of the ulcers and cause the hairs to become matted together. Large portions of the integuments of the scalp may thus be destroyed. In rare cases the ulceration leads to necrosis of the bones.

Syphilitic ulcers on the trunk, due to gummata and nodules, are most frequently found on the back and in the gluteal regions. They are mostly superficial; the nodules appear in circles or groups, suppuration takes place, and ulcers are formed. Deeply-seated gummata in the connective tissue of the gluteal regions may result in the formation of large irregular cavities, with sinuses leading in various directions. Gummata are more frequently developed in the gluteus maximus than in any other muscle.

The Pigmentary Syphilide.—This term has been applied to certain brown patches, apparently caused by deposit of pigment, and noticed in persons the subjects of syphilis. These discolorations have been described by several authors as a specific exanthem, due to the direct effect of the syphilitic poison, and disappearing under anti-syphilitic treatment. The patches are of a dirty-brown or brownish-yellow colour, irregular in shape, some isolated and others united at several points, with small portions of healthy skin between them. According to another view, these white portions are places from which the pigment has disappeared. The spots are for the most part smooth and dry, not elevated above the surrounding skin, and not very sharply defined. They cause no itching or other disagreeable sensation, they continue for a long period without change and show no signs of desquamation.

The most frequent seats of these patches are the sides of the neck, the chest, and the face. They are said to be of spontaneous origin, and not the results of a roseolous or other well-recognised cutaneous affection. It is, however, extremely doubtful whether these spots have any necessary connection with syphilis. They are not invariably influenced by specific treatment, and they are not dependent upon cellular formation. They resemble the anomalous pigmentary marks and spots which frequently appear in pregnant women, and in women suffering from uterine derangements.

CHAPTER IX

SYPHILITIC AFFECTIONS OF THE HAIR AND NAILS

Alopecia Syphilitica.—Loss of the hair is a frequent symptom of constitutional syphilis. It is generally associated with the early forms of eruption, and is sometimes preceded by severe headache. The hair is observed to lose its glossiness and to fall out freely when combed. Not only the hair of the head, but that of the beard and moustache, the eyebrows, the eyelashes, and the hair of the pubes and axillæ may be thus affected. The loss may be rapid or more or less chronic in its progress. The hair does not fall out in any particular part of the head, but the loss is either uniformly distributed, so that the hair becomes thin, or it occurs in irregularly scattered patches. This latter form is the less frequent. In most cases the baldness is not very marked, and it is rarely permanent. There is no visible change in the skin in this form of alopecia. It sometimes happens that only the beard and moustache, or only one of these, are affected. Loss of hair of course occurs as a result of syphilitic ulceration of the scalp, chin, &c. In this case the bald spots are the scars left by the ulcers. Even without ulceration the loss of hair is sometimes very considerable in much debilitated subjects. In these cases, however, new hairs are produced as soon as the general condition has become improved, and in this respect syphilitic alopecia resembles the loss of hair which is frequently observed after typhoid fever and other exhausting diseases. Restoration takes place more rapidly in young than in old subjects. Both

sexes are equally liable to alopecia as a result of syphilis. The condition has been unjustly attributed to the use of mercury, but it has been repeatedly observed in cases in which this remedy has not been used, and it is almost invariably benefited by mercurial treatment.

There is little difficulty in the *diagnosis*. Other symptoms, especially glandular enlargement, are always present at the same time.

The *treatment* consists in the local application of the Unguent. Hydrarg. Oxid. Rub. and the internal exhibition of mercury.

Syphilitic Affections of the Nails.—These occur in two principal forms. In the first of these inflammation and ulceration take place in the skin immediately surrounding the nail, which is consequently destroyed or becomes detached (paronychia). In the second form, the nail itself is the seat of certain changes, the surrounding parts being far less affected (onychia).

In *paronychia syphilitica* the mischief may be confined to the root of the nail, to the part of the border corresponding to the lunula, or it may extend along the entire edge. In either case the skin becomes reddened, swollen, and painful, and projects over the root of the nail. The swelling may subside and gradually disappear, but in most cases a large vesicle is formed, the epidermis being raised by seropurulent fluid. A superficial ulcer, of varying extent, results from the detachment of the epidermis. In severe cases the matrix of the nail becomes involved and destroyed by the ulcerative process, which gives rise to intense pain. The nail then loses its transparency, becomes dull and brittle, and by degrees separates from the matrix. As a general rule, a new, though somewhat imperfect, nail is formed. If the ulceration has involved the whole of the matrix no new formation will take place, but a few small patches of horny substance may appear in the course of time. Detachment of the nails in cases of syphilis is sometimes brought about in another way. A moist papule forms on the skin at the border of the

nail, and gradually extends to the matrix, thus separating the nail from its bed. Disintegration of the papule softens the nail and facilitates its detachment. These moist papules are more common on the toes than on the fingers; the difference in this respect is probably owing to the moisture of the former parts and the pressure of the shoes. The appearance may closely resemble that of an in-growing toe-nail. Paronychia syphilitica is generally associated with some form of pustular eruption.

Onychia syphilitica is characterised by alterations in the texture of the nail, without any marked affection of the surrounding parts. It may, however, be doubted whether it ever happens that the nails alone are involved; it is more probable that the changes they undergo are really due to lesions of the matrix or adjoining integument. The alterations which are seen in both finger-nails and toe-nails are of several kinds. In one form the nail loses its colour and lustre, and numerous white specks make their appearance; these are due to lesions of the matrix which interfere with the nutrition of the nail. Slight pressure against the free edge of the nail causes pain. In more severe forms the nail undergoes further alterations of structure, it becomes opaque, brittle, and rough; its growth may entirely cease, in which case its posterior border becomes free and separate from the matrix, while its free border is split and cracked; its surface presents numerous ridges and furrows; detachment of the nail eventually takes place. Any new nail that forms is rough, more or less grooved, and irregular in shape. In other cases the nail remains, but its free border becomes thickened and split, and breaks off in layers. Syphilitic onychia is often associated with psoriasis palmaris. Eczema, psoriasis, and other non-specific skin affections sometimes cause lesions of the nails resembling those due to syphilis. The diagnosis can be made only by the aid of the previous history of the case.

The *treatment* of syphilitic affections of the nails consists in the careful administration of mercury internally,

and the application of various local remedies. In mild cases of paronychia it will be sufficient to poultice the part at first and subsequently to apply mercurial ointment or black wash. When the ulceration is severe, iodoform in very fine powder should be applied with a camel-hair brush. The diseased matrix sometimes throws out fungous granulations; these may be reduced by applying Liquor Potassæ, sulphate of copper, or nitrate of silver. The pain, which is often a very prominent symptom of the ulceration, may be relieved by ointments containing opium or belladonna. Syphilitic onychia requires no special local treatment; the nail should be protected from injury and carefully trimmed. If separation takes place, mercurial ointment, diluted with one or two parts of vaseline, may be applied to the matrix. Forcible removal of the nails, for syphilitic onychia, as practised by some surgeons, is, in my opinion, quite unnecessary, and therefore unjustifiable. Not long ago, a patient consulted me as to whether evulsion of his thumb-nail was necessary, the operation having been suggested by a distinguished surgeon, who had previously removed the patient's forefinger-nail. I advised the patient not to submit to the operation, but to apply ointment of red oxide of mercury, and to take iodide of potassium. Under this treatment healthy action was set up, and the nail resumed its normal appearance.

CHAPTER X

SYPHILIS OF THE MUCOUS MEMBRANE

Primary syphilitic affections of the mucous membrane are the consequences of the direct action of the virus upon a given part. The lesions now to be considered are due to the presence of the virus in the blood, and are not confined to the genital organs, lips, and mouth, but may occur in any mucous surface, some parts being more liable to be affected than others. A description will first be given of those lesions of the alimentary canal and respiratory tract which are discoverable on examination.

General Characters of Syphilitic Affections of the Mucous Membrane.—The mouth and throat are the parts most commonly affected, and the lesions often co-exist with the cutaneous manifestations to which they bear a certain resemblance as regards their development, general character, and course. Like the cutaneous affections, certain of the mucous lesions occur at an early period, while others appear at later stages. Those belonging to the former class are, as a general rule, of a more superficial character, and run their course without severe or permanent destruction of tissue. The later lesions are far more severe and destructive, and are often of a very chronic character, sometimes continuing for many years after all cutaneous manifestations have disappeared, and constituting the only indication of the existing disorder.

The syphilitic lesions of the mucous membranes are, however, not to be regarded as exactly akin to, or a reproduction of the cutaneous eruptions. The anatomical structure of mucous membranes differs considerably from

that of the integument, as regards vascularity and the arrangement and form of the glands. Mucous membranes are, moreover, kept constantly moist by their secretion. These differences are sufficient to account for the distinctions which exist between the cutaneous and mucous lesions.

Syphilis appears in the mucous membranes in three distinct forms: (*a*) diffuse erythema, (*b*) papules, and (*c*) gummatous tubercles or nodules. Pustular eruptions are not observed on mucous membranes as a result of syphilis.

Erythema of the mucous membrane is manifested by swelling of the part and a sharply defined redness diffused over a greater or less extent of surface; whitish patches and small erosions are often distributed over the reddened surface. At first the part is dry and sore, but it subsequently becomes covered with mucous secretion. The amount of swelling varies; sometimes it is but slight, but there is generally considerable œdema when parts such as the uvula, tonsils and larynx are affected. Erythema is an indication of recent infection; it is always accompanied by other early symptoms such as glandular induration, syphilitic roseola, &c. Its duration varies from a few days to several weeks. In the throat it is ordinarily more severe and more common in persons liable, from their occupations and other causes, to suffer from ordinary catarrh of that part. Relapses are frequent, and in these cases a papular cutaneous eruption sometimes co-exists with the erythema.

Papular Eruptions of Mucous Membranes.—These differ in form from the papular cutaneous eruptions and from the moist papules previously described. They are found on the mucous membrane of the mouth, nose, throat and larynx; on that of the vulva, vagina and vaginal portion of the uterus, at the orifices of the urethra and anus, and on the inner layer of the prepuce. They are for the most part flat and superficial, projecting but

little above the level of the adjacent surface. They are also less developed than the cutaneous papules. Small reddened spots are first seen, and on these the papules gradually appear. If left to themselves, they become covered with a whitish pellicle, resembling the mark produced by a slight application of nitrate of silver. Such papules have received the name of *plaques opalines*. This opaline pellicle frequently becomes detached, leaving a reddened spot or erosion, very apt to bleed on the slightest irritation. The papules may disappear by absorption, or may undergo further changes. They may become converted into small ulcers, with irregular edges and uneven surfaces, on which granulations subsequently appear. These ulcers are sometimes covered with greyish or yellowish-white patches resembling aphthæ. In other cases, small pointed growths spring up from the papules. Rhagades or fissures are another result of papular eruptions of mucous membranes. These are frequently seen at the margins of the tongue, and at the orifices of the nostrils and anus.

The eruption of the papules on mucous membranes is sometimes accompanied by pain and soreness, which, however, soon subside unless ulceration or fissures occur. If left to itself, the eruption pursues a very tedious course; fresh crops of papules appearing from time to time. The papules, however, completely disappear in the course of time, no cicatrix remaining, unless ulceration has occurred. When this latter process has taken place, the part affected becomes extremely painful, and its function may be seriously interfered with. Thus ulcerating papules on the lips, tongue, or tonsils, interfere more or less with speaking or swallowing, and often cause severe pain and profuse flow of saliva. Certain mechanical and other causes appear to induce the development of papules in syphilitic subjects. Thus, they are especially apt to appear on the lips and tongue of smokers; on the lips of glass-blowers and on the genital organs in persons of dirty habits. Relapses are of frequent occurrence.

The Development of Gummatous Tubercles or Nodules in the mucous membranes and submucous tissue, is similar to the process which occurs in the integument. These growths are found in the mucous membrane of the mouth and lips, on the tonsils, velum, and palate, at the back of the throat, and on the borders of the tongue. They are also found in the nose, pharynx and larynx, and in the rectum and other portions of the bowels. A small nodule makes its appearance, and gradually increases in size until it becomes as large as a pea or a bean, and projects above the surface as a distinct, though not well-defined tumour. Its growth gives rise to little or no pain. It does not assume a decidedly spherical or globular form, like that of the cutaneous lesions, with which it is identical in structure, but it is somewhat flattened and not circumscribed. Resolution may take place and the growth may disappear; on the other hand, a process of molecular disintegration may be set up, with ulceration as a result. In the latter case, much loss of tissue may be caused, especially in such parts as the uvula and soft palate. The healing of the ulcers may likewise cause considerable deformity and contraction of tubular organs, as in the pharynx, larynx, and rectum. When the affected mucous membrane is adjacent to cartilage and bone, various destructive processes, *e.g.* periostitis, followed by caries or necrosis, are common results. Such a consequence of the development and disintegration of gummatous growths in the mucous membrane is frequently seen in the nose. Sometimes, however, the process begins in the periosteum, cartilage or bones, and extends from these towards the surface.

Syphilis of the Mucous Membrane of the Mouth and Throat.—Having now given a general account of the forms in which syphilis appears in mucous membranes, it remains to consider the special local symptoms and peculiarities. Syphilitic affections of the mucous membrane of the mouth and throat take the form of (*a*) erythema (*b*) papules

and (*c*) gummata. The erythema may occur in an acute, or a chronic form.

Acute Syphilitic Angina often appears at the same time with the first cutaneous manifestation; but it is not of such common occurrence as the latter affection. The patient complains of uneasiness, soreness, or more or less pain in the throat, especially on swallowing. On examination, the mucous membrane of the throat is found to be red and swollen, and these appearances may be of a superficial and slight character, or indicative of a more intense form of inflammation. The soft palate is especially implicated, and the redness generally extends in a uniform manner over the pillars of the fauces, tonsils and back of the throat. The inflammation sometimes extends to the Eustachian tube, and causes deafness and noises in the ears. Extension to the larynx may take place, and cause hoarseness or loss of voice. After continuing in this state for a day or two, the redness becomes less marked; the swelling increases and the mucous membrane looks dull and somewhat opaque.

These appearances may either subside or become aggravated. In the latter case, the mucous membrane, especially of the more prominent parts, such as the pillars of the fauces and the velum, becomes still more swollen, and the latter structure is found stiffened and fixed by the infiltration. The tonsils are swollen and project into the throat as hard nodulated swellings, covered with more or less secretion. Small vesicles make their appearance on the surface of the inflamed mucous membrane. These consist of the inflamed and distended follicles, and are often converted into small ulcers. The surface of the tonsils is also prone to become ulcerated, and in these parts the process may extend to a considerable depth. Ulcers of the velum sometimes extend through its substance, and lead to perforation.

Diagnosis.—The symptoms of syphilitic angina closely resemble those of ordinary catarrhal inflammation of the throat. An abrupt line of demarcation is to some extent

characteristic of the former affection, but the diagnosis will depend mainly upon the history of the case and the co-existence of other symptoms. Glandular enlargement will invariably be present, and in most cases there will be a roseolous or papular eruption on the skin. The angina of scarlatina is ordinarily accompanied by a more severe degree of fever.

Papular Eruptions on the mucous membrane of the mouth vary in form according as they are developed from normal papillæ, or result from infiltration of the follicles. In the former case they constitute firm elevations, resembling small warts; in the latter, they consist of roundish or irregularly shaped nodules. The arches of the palate, the tonsils, and the inner surface of the cheeks are the parts most commonly affected. These structures are usually swollen and painful before the papules appear; but the latter may sometimes be found in the absence of any other local symptoms. If the inflammation be of a diffuse character, the papules may be scarcely recognisable. They are, as a general rule, most conspicuous, and often confluent, on the velum and anterior arch of the palate. As the case proceeds, the papules may disappear by resolution, with some amount of superficial disintegration in which the epithelium is converted into opaque grey patches. Superficial erosions, or even ulcers, are often caused by the detachment of these patches, and when the papules are confluent, ulcers of considerable size may be thus originated. Such ulcers are frequently seen on the tonsils, and they give rise to much pain, swelling, and difficulty of swallowing. The ulcerated surface is also covered with more or less epithelial débris, the decay of which communicates a foul odour to the patient's breath.

Gummatous Tubercles or Nodules are developed in several parts of the throat; but the hard and soft palate, the uvula and the tonsils are their most frequent seats. Gummatous formations in these parts may be either of a circumscribed or of a diffuse character, and they belong

to the later stages of syphilis. Their development is attended by little or no pain. At one or more spots, a small nodule makes its appearance; or the mucous membrane becomes reddened and thickened over a small portion of its area. The infiltration sometimes takes place in the sub-mucous tissue. These nodules and infiltrations rarely become absorbed; molecular disintegration with ulceration is the most frequent course. The form of the ulcer varies, according as the process begins on the surface or in the interior of the nodule. In the former case the ulcer will be of a superficial character, with infiltrated edges and base; in the latter, a cavity is formed, much more extensive than the superficial opening. Ulceration due to gummata in the structures of the mouth and throat is often of a very serious character, and leads to such consequences as loss of the soft palate, caries of the bones in the roof of the mouth, destruction of portions of the tongue, &c. Gummata in the hard palate sometimes give rise to ulcers which become confluent and extend over the whole surface. Necrosis of the subjacent bones is the almost inevitable result. If the process commences in the submucous tissue of the hard palate, the disintegration is apt to extend in both directions, and the bone becomes perforated.

In the soft palate and pillars of the fauces gummatous formations occur in the loose connective tissue. One or more nodules make their appearance, the part looks red and swollen, and the patient complains of pain and difficulty in swallowing. The nodules are sometimes developed on the posterior aspect of the soft palate and may elude observation for some time. Suppurative disintegration is the ordinary course, and the process usually commences in the interior of the nodule. The ulcer thus formed is often funnel-shaped, and perforation and partial or complete destruction of the soft palate and of the pillars of the fauces are frequent results. These formations, owing to the ulceration, loss of tissue, cicatrisation and contraction to which they give rise, lead to serious changes in the

structures of the throat. The most common among these are partial or entire loss of the soft palate, adhesions between its border and the surrounding parts and contraction of the arches of the palate and of the posterior nares.

Gummatous formations in the tonsils cause these organs to be much swollen, sometimes to such an extent that they meet in the middle line. In such cases speaking becomes very difficult, and hearing is also interfered with owing to pressure on the openings of the Eustachian tubes. As occurs in other parts, the swelling terminates either in resolution or in suppurative disintegration and ulceration.

Syphilitic Affections of the Pharynx.—Erythema, papular eruptions, and gummatous formations occur in the pharynx. There is, however, nothing peculiar in the appearances presented by the two former affections. They are less common in the pharynx than in the soft palate and tonsils, where they often give rise to ulceration. On the other hand, the posterior wall of the pharynx is frequently the seat of ulceration, due to gummata. These growths are developed in the mucous membrane and submucous tissue on each side of the median line, and at a little distance from it. The resulting ulcers are of various sizes, and exhibit a marked tendency to spread, especially in debilitated subjects. The acts of swallowing and speaking are performed with pain and difficulty; there is frequent and troublesome cough, and more or less profuse seropurulent or sanious expectoration.

Necrosis of the subjacent vertebræ, followed by inflammation of the spinal meninges, has been known to result from gummatous ulceration of this part. The ulcers heal but slowly, and the contraction of their cicatrices may seriously impair the function of the throat. More or less difficulty of breathing and dryness of the throat, owing to destruction of many mucous follicles, are frequently complained of. If the mischief has extended to or from adjacent parts great loss of tissue may result, and adhesions will probably be formed, whereby the size of the

cavity will be much diminished, and its shape considerably altered. The Eustachian tubes may become closed, and adhesions between the velum and the posterior wall of the pharynx may completely shut off the cavity of the nose from that of the mouth. A very marked case of this kind has been reported by my colleague at the Lock Hospital, Mr. Walter Coulson.* The patient was a man, æt. 27, with extensive syphilitic ulceration of the posterior wall of the pharynx and border of the soft palate. Syphilis had been contracted five years previously; sore throat and rheumatic pains had been prominent symptoms, but no cutaneous eruption could be remembered. A few weeks after the ulceration appeared it was found that the soft palate had become adherent to the back of the pharynx, forming a continuous vault. There was nasal voice, oral respiration, and total loss of smell and taste. The adhesions were too strong to be broken down; separation by dissection would probably have been followed by reunion; an incision was therefore made through the soft palate from right to left, leaving a portion half an inch wide attached to the hard palate. The part adherent to the pharynx was then torn away; it was found to be very thick and fleshy. Immediate relief followed the operation, and the wound cicatrised after threatening to slough. Contraction taking place, a plug of lint with a piece of quill in the centre was introduced into the opening. A year later it was reported that the communication still remained open, and that great benefit had resulted from the operation.

Ulcers caused by the disintegration of gummatous growths sometimes occur on other portions of the pharynx. These may be seated so low down as to require the laryngoscope for their detection; or the indurated edge of the ulcer may perhaps be felt by the finger. The patient complains of dryness and soreness of the throat, and more or less pain on swallowing. If the ulceration extends to the larynx, breathing and speaking will be interfered with.

* 'Lancet,' Nov. 15th, 1862.

Small ulcers may heal without giving rise to any further symptoms, but the cicatrisation of large ulcers is certain to produce more or less distortion and constriction of the cavity, and impairment of its function. As a matter of course severe ulceration of the pharynx is attended with febrile symptoms and other evidences of debility.

Treatment.—Constitutional treatment is, of course, required for these affections of the mouth and throat. Mercury must be administered for those of a secondary character, and the ulceration resulting therefrom; while iodide of potassium is indicated for gummatous growths and their consequences. The swelling and pain of the early stage of the angina may be relieved by the inhalation of steam and warm compresses to the throat. With regard to the local treatment in subsequent stages, ulcers about the mouth should be touched occasionally with nitrate of silver, or with a camel-hair brush dipped in a strong solution of sulphate of copper. A gargle containing chlorate of potash, borax, or alum should also be used every three or four hours. "Pastilles de Dethan," lozenges containing chlorate of potash, prepared by a French chemist, are very efficacious in these throat-affections, and are more palatable than the lozenges of the Pharmacopœia. When the ulceration is extensive, and situated at the back of the throat, a strong solution of nitrate of silver should be applied by means of a spray-producer, or the part should be painted over with a solution of the perchloride of mercury (2—4 grs. to ℥j). When necrosis has taken place, or when, under other circumstances, the secretion is very abundant and fœtid, a sulphurous-acid gargle (℥ss to ℥j) or a gargle of the Liq. Sodæ Chloratæ will form the best disinfectant.

CHAPTER XI

SYPHILITIC AFFECTIONS OF THE TONGUE

The tongue may be affected both in the earlier and in the later stages of syphilis, and as a general rule, the lesions are well marked. The affections connected with the secondary stage consist of mucous papules and their modifications; while induration and gummatous formations are characteristic of the tertiary stage. Primary sores are sometimes found on the tongue.

Mucous Papules occur on the dorsum of the tongue, especially at the borders and towards the apex. Their development is usually simultaneous with that of a cutaneous papular eruption, and of similar lesions in the mouth and throat. They form little flattened elevations, covered at first by a pearly epithelial pellicle, the speedy detachment of which causes the papules to appear as bright red erosions. Owing to the irritation to which they are subjected by the movements of the teeth during mastication, &c., their shape and appearance are liable to become much altered. When the dorsum of the tongue is the principal seat of the lesion a condition is sometimes developed which has been called *psoriasis linguæ*. In this affection the tongue assumes a dull-grey, rough appearance; its surface is dotted over with closely-set, hair-like, and penicillate projections, scattered among which are round isolated spots, presenting absolutely smooth surfaces. Besides these appearances there are numerous superficial furrows, some longitudinal, others more or less transverse, and with yellowish or reddish edges, often tinged with blood. The thread-like projec-

tions consist of the elongated filiform papillæ, which are swollen and much increased in size. The intervals between them are filled up by accumulations of epithelial cells and *débris*. The papillæ circumvallatæ are also enlarged, and sometimes excoriated, and the surface behind these is thickly coated. In well-marked cases the entire papillary structure of the tongue is the seat of congestion and infiltration ; increased formation of epithelium, which subsequently becomes loosened and detached in shreds, takes place over the entire surface. The fungiform papillæ stand out as little red nodules. The sides of the tongue are marked by the teeth, and are generally excoriated.

If the above-described condition becomes chronic, it results in the development of the so-called *keratosis* of the tongue, which is analogous to the *psoriasis cornea* of the hands and feet. The surface of the tongue becomes covered with striated, roundish, thick epithelial crusts, greyish-white in colour, separated by fissures, or by smooth portions of the surface, or by projecting papillæ. The fissures, which are due to the induration of the epidermis, often extend deeply into the organ ; their edges are raw and ulcerated and bleed freely, and the condition is aggravated by the movements of the tongue. As a final stage, consequent upon detachment of the epithelial crusts, the surface may become smooth and glistening, all trace of papillary structure being obliterated. Such cases run a very tedious course, and any slight improvement is apt to be followed by relapse. This condition, like all forms of ulceration of the tongue and throat, is much aggravated by smoking. It sometimes extends to the lips and internal surface of the cheeks.

Epithelial cancer of the tongue has been known to originate in syphilitic affections of the organ. There is no necessary connection between syphilis and cancer, and it cannot be admitted that, in a general way, the former is a predisposing cause of the latter. The elements of epithelioma are, however, derived from the epithelium of

the skin and mucous membranes, and some external source of irritation often appears to be the exciting cause of the disease. In syphilitic "psoriasis" and "keratosis" of the tongue, epithelial proliferation is already present, and the affected part is constantly exposed to irritation. Kaposi, of Vienna, compares the development of epithelioma in such cases to that which sometimes occurs in connection with simple warts.

Induration of the Tongue, occurring in the course of syphilis (glossitis syphilitica sclerosa), may be either diffused or circumscribed, and may affect either the superficial or the deeper parts. When the whole or the greater part of the organ is involved, it becomes enormously swollen, red, and tense, but the pain is inconsiderable; the mucous membrane becomes perfectly smooth and the papillæ are no longer visible. Half the organ may be thus attacked while the other half remains normal. If the inflammation involve circumscribed portions of the muscular structure, one or more hard nodules can be felt by the finger. These, as well as the diffused indurations, may altogether subside, or may lead to further changes in the structure and appearance of the tongue. In the latter case, after the condition has existed for some time, the newly-formed fibrous tissue begins to contract, and the tongue becomes puckered or wrinkled. If the process has been superficial, the changes may be of a slight character, but if the deep parts of the tongue have been extensively involved, the organ will assume a more or less lobulated appearance. The lobules are separated in various directions by deep furrows; those near the median line of the organ run parallel with it, while those near the margins take a transverse direction. The fibrous tissue bounding the lobules may become almost cartilaginous.

Gummatous Tumours are sometimes found in the tongue; they belong, like the indurations, to the later stages of syphilis. They are usually single, but sometimes multiple; they are found both in and beneath the

mucous membrane, and in the substance of the organ, and most commonly near the middle of the dorsum and at the margins. They are firm and elastic to the touch, and their size varies from that of a small pea to that of a nut. If superficial, they form visible prominences, but if deeply seated, they may give rise to the appearance of a diffused swelling. Sometimes two or more gummatous tumours unite and form a large mass. Their development is not attended by any pain; the patient may complain that his tongue feels stiff, and that speaking is somewhat difficult. These growths usually disappear under proper treatment, but if left to themselves they are apt to result in the formation of ulcers. Disintegration may commence on the surface or in the interior. In the former case an irregularly shaped ulcer appears, with raised, hard, infiltrated and jagged edges, and a greyish indurated base. If the disintegration commences in the centre of a growth of some size, the parts covering it become raised, distended, and softened. A small opening then appears, and the contents of the gumma are gradually discharged after the manner of an abscess. The opening remains small and its margin is stiff and indurated, it leads into a cavity of some size, containing greyish-yellow, caseous *débris* mixed with pus and blood. After a while the discharge ceases, granulations spring up from the bottom of the ulcer, and the orifice finally closes leaving a more or less marked and puckered cicatrix. When the ulcerative stage has been reached, the pain is very considerable. Gummatous ulcers have been observed to become cancerous, and epithelioma sometimes follows gummatous formations in this organ. A case of this latter kind occurred recently in my practice. The patient, a man aged 50, with a history of syphilitic infection dating some twenty-five years back, presented himself about a year ago with gummatous growths in his tongue. Five months afterwards, I detected well-marked epithelioma on one side. It was accompanied by the usual symptoms, viz. pain and inability to eat solid food.

Rapid increase taking place, one half of the affected organ was removed, with a result which has continued to be satisfactory up to the present time.

Lesions of the tongue due to cancerous or tubercular deposits sometimes closely resemble those just described, and the diagnosis is often difficult. Cancerous infiltration gives rise to nodules generally harder and firmer than gummata, but the exact amount and the consistence of the infiltration may be very hard to determine owing to the development of inflammatory swelling. The development of cancer is generally attended with pain, often shooting towards the ear, and the progress is more rapid than that of gummata. When the ulcerative stage has been reached, the appearances are very similar in the two cases. In syphilis, however, the swelling of the neighbouring glands is rarely so considerable as in malignant disease, in which the submaxillary gland may become as large as an ordinary egg. Disintegration of a gummatous nodule usually begins in the interior ; in cancer the ulceration commences on the surface. The base of a gummatous ulcer is generally less vascular than that of a cancerous one, which always bleeds freely. An ulcer surrounded by an induration which does not progressively extend, is likely to be of syphilitic origin. In any doubtful case the effect of full doses of iodide of potassium should be tried. Under the use of this remedy, syphilitic disease of the tongue rapidly improves, but no effect is produced in cases of carcinoma. In cases of epithelial cancer of the tongue the appearances may closely resemble those due to syphilitic disease. Zeissl states that the most important diagnostic signs of epithelioma are the sebum-like plugs of curdy material which may be pressed out from the mucous membrane. The tongue is rarely the seat of tuberculous deposit, but nodules and ulceration due to this cause are sometimes met with. Tuberculous ulcers are, however, always associated with tubercles in other organs, and they are not influenced by anti-syphilitic treatment.

Prof. Billroth* has recorded two remarkable cases of tuberculous disease of the tongue, presenting great difficulties in diagnosis. In one case, a man, with general symptoms of phthisis, presented himself with a nodule the size of a hazel-nut in the middle line of the dorsum of the tongue. The swelling had increased somewhat rapidly and was at times very painful. Iodide of potassium was tried without effect, and the growth was therefore removed. Fatty small-celled infiltration was discovered between the muscular fasciculi, "around which lay a ring of breaking-down miliary tubercle." The patient died of tuberculosis of the lungs and intestines. In the second case, there was a history of hæmoptysis and bronchial catarrh. The anterior and right half of the tongue was the seat of an ulcer with hard sinuous edges and irregular base. Syphilitic infection was denied and iodide of potassium was given without effect. Microscopical examination of a piece removed from the edge proved decidedly that the ulcer was not due to cancer. The application of potassa fusa seemed to do some good, but the ulceration soon resumed its former aspect. No further improvement took place, and the patient shortly afterwards died from pulmonary tuberculosis.

Treatment.—This, generally speaking, is the same as that of syphilitic affections of the mouth (see p. 132). In a case of extensive tertiary ulceration of the tongue I observed great benefit from large doses of the compound decoction of sarsaparilla after the iodide and mercurials had been used without avail.

* 'Clinical Surgery,' New Syd. Soc. Ed., p. 56.

CHAPTER XII

SYPHILITIC AFFECTIONS OF THE LARYNX

Affections of the larynx occur both in the early and in the later stages of syphilis. In the former the mucous membrane is especially implicated; in the latter the morbid process invades more particularly the cartilages, fibro-cartilages, and ligaments. The various lesions may be described under the headings of acute and chronic catarrh, papules, gummata, and ulceration.

Laryngeal Catarrh occurs in the early stages of constitutional syphilis, and is often coincident with a cutaneous erythema. The anatomical appearances and the symptoms resemble those of the same affection due to any other cause. The mucous membrane, as seen with the aid of the laryngoscope, is red and swollen. According to the stage of the disease, the surface is either drier than natural, or is covered by secretion and detached epithelial cells. The throat and nasal passages are often similarly affected at the same time. The complaint is generally obstinate, especially if treated as an ordinary catarrh. The diagnosis must be made by the aid of co-existing symptoms. If the catarrh be due to syphilis, there will be the history of a recent infection, the presence of indurated glands, and probably of a cutaneous eruption.

Mucous Papules are of rare occurrence in the larynx, but they are sometimes found during the first twelve months on the margin of the epiglottis, on the cartilages of Santorini, on the arytænoid cartilages, and upon the arytæno-epiglottidean folds. As seen with the laryngo-

scope, they appear as small roundish growths, either distinctly circumscribed or less defined, reddish in colour, and not very prominent. They sometimes present a whitish appearance owing to thickening of the epithelium. More or less catarrh accompanies the development of the papules. If the epithelium become detached, the growths project as red points, surrounded by viscid secretion. Papules are very rarely found on the vocal cords.

Gummatous Growths are much more frequent in the larynx than papules, and they often lead to serious destruction of tissue. They occur either in the form of isolated nodules or as a more or less diffuse infiltration, in the epiglottis, the arytæno-epiglottidean folds, the arytænoid cartilages, and on the true and false vocal cords. In the epiglottis the nodules either stand out as distinct projections, or cause the part to appear uniformly thickened. The same appearances are observed on the arytæno-epiglottidean folds, and on the mucous membrane of the arytænoid cartilages. Gummatous infiltration affecting the vocal cords gives rise to considerable swelling and difficulty of breathing. The cords come into contact anteriorly, and only a very small space is left for the passage of air. Infiltration of the false vocal cords leads to swelling and redness of the parts. The distinct nodules, which are found in the above-mentioned structures, are equal in size to a millet seed, or even larger, and are dusky red or yellowish-red in colour. As occurs in other parts, these infiltrations and isolated growths may either become absorbed, or may undergo disintegration and ulceration. Such ulcers are most frequently seen on the epiglottis. They are surrounded by a swollen and reddened margin, and are at first circumscribed, but they exhibit a tendency to increase in depth, and they sometimes perforate the epiglottis and destroy considerable portions of its substance. The ulceration may also extend to the adjacent structures. On the true vocal cords the process has a tendency to spread from before backwards, destroying the mucous membrane and portions

of the cords themselves. The ulcers are more or less irregular in form, and are covered with a tenacious purulent secretion. They are also found in the trachea, especially at its bifurcation, and in the bronchi.

Syphilitic ulceration of the larynx gives rise to various symptoms, among which the most common are—a feeling of tickling or soreness in the throat; hoarseness or more or less loss of voice; dyspnœa with a harsh barking cough; and mucous or purulent expectoration, perhaps tinged with blood. Difficulty of swallowing may be also complained of. In cases in which the cartilages are involved, œdema of the glottis is especially apt to occur. The symptoms vary according to the position and extent of the ulcers. Swallowing is not interfered with unless the ulceration extends to the pharynx. Such extension is especially likely to occur when the lesions are situated on the posterior wall of the larynx. The pain may then be so considerable as almost to prevent the patient from swallowing; and the difficulty is increased by spasm of the pharyngeal muscles. The hoarseness and other changes in the voice are due to swelling or partial loss of the vocal cords, or to diminished mobility, owing to impairment of the functions of the muscles. The expectoration is usually scanty, muco-purulent in character and only tinged or streaked with blood. If necrosis of the cartilages has taken place, fragments of these structures may be found in the expectoration. The amount of dyspnœa varies according to the structural alterations. If œdema of the glottis occurs, symptoms of suffocation soon become prominent, and the patient will probably die, unless relieved by tracheotomy. Fatal asphyxia has been caused by a detached fragment of necrosed cartilage becoming lodged in the air-passages. As a secondary result of necrosis of the cartilages, phlegmonous inflammation of the surrounding parts has been observed to occur.

The ultimate results of syphilitic disease of the larynx are often of a very serious nature. Cicatrices left after

syphilitic ulceration may considerably diminish the size of the cavity and impair the functions of the various parts of the organ. In cases in which the epiglottis is completely destroyed, swallowing may still be practicable, but the passage of foreign substances into the larynx will often cause much distress. Adhesions may be formed between the false vocal cords and the arytæno-epiglottidean folds, while lesions of the mucous membrane of the true vocal cords may lead to adhesions and contraction of the glottis. Extensive cicatrices on the posterior wall of the larynx may prevent any movement between the cricoid and arytænoid cartilages. Cicatrices due to ulceration are also found in the trachea. These consist of whitish tissue containing the cartilages more or less destroyed. Inspiration in such cases becomes difficult, owing to collapse of the walls of the trachea, which may be also much narrowed and diminished in length.

Pointed condylomata sometimes occur in the larynx, on the arytænoid cartilages and on the arytæno-epiglottidean folds.

With regard to *diagnosis*, other forms of ulceration, viz. tuberculous and cancerous, occur in the larynx. Ulcers due to tubercles, like those connected with syphilis, are especially prone to occur in those parts of the larynx which are most copiously supplied with glands. The margins of a syphilitic ulcer are, however, red and congested, while in tuberculosis the mucous membrane, even in the neighbourhood of the ulcers, is generally very pale, and is studded over with small yellowish or gray nodules, consisting of the infiltrated glands. The ulceration results from the disintegration of these nodules. In the case of either affection the diagnosis will be assisted by the previous history. In a doubtful case recorded by Prof. Billroth, the tuberculous nature of the growth was determined by the microscopical examination of a small portion that had been removed. If the laryngeal affection be accompanied by symptoms of tuberculosis of the lung, its nature will be tolerably evident, but the possi-

bility of the coexistence of the two diseases must not be lost sight of. Cancer of the larynx is very rare as a primary affection. Cases of epithelial cancer of the epiglottis have been recorded. In such instances the diagnosis might for some time be extremely difficult.

Treatment.—This must be of a local as well as a general character. For the earlier affections, if mercury has been withheld or given insufficiently, its use must be commenced forthwith. Local applications should, whenever possible, be applied to the ulcers, with the view to prevent them from spreading, and to promote cicatrisation. These consist of solutions of nitrate of silver, nitrate of mercury, and chloride of zinc. Iodoform, reduced to an *extremely fine* powder, may be applied by means of an insufflator. Bromide of potassium may be given where there is troublesome spasm of the muscles. Symptoms of œdema may be relieved by the patient swallowing small pieces of ice, and if this should fail, by scarifying the mucous membrane with a well-guarded bistoury. Opium will be necessary to relieve pain, and the fœtor of the breath may be corrected by disinfectants, *e.g.* solutions of carbolic acid or of thymol, applied by means of a spray-inhaler. If the larynx be much narrowed owing to cicatricial contraction, tracheotomy may become necessary. Contraction of the trachea does not admit of surgical interference. The lesions are most common at or near the bifurcation of the tube.

CHAPTER XIII

SYPHILITIC AFFECTIONS OF THE NASAL MUCOUS MEMBRANE

Syphilis affecting the nasal mucous membrane gives rise (*a*) to catarrh of the part, (*b*) to an eruption of papules, and (*c*) to the development of nodules which may subsequently become ulcerated and cause considerable destruction.

Nasal Catarrh, in acquired syphilis, appears during the eruptive period. The lower part of the nose is mainly affected. The symptoms resemble those of coryza, and the diagnosis can be established only by the aid of coexisting symptoms. In severe cases the secretion is profuse, and causes much irritation and excoriation of the anterior nares. The sense of smell is not interfered with unless the membrane covering the upper meatus is involved. In this case there is more or less loss of the olfactory sense, and the patients are conscious of a disagreeable odour. If catarrh alone be present the secretion is almost odourless, but if ulcerating papules, or gummata coexist, a very foul odour will be communicated to the patient's breath and the nasal discharges. The coryza of hereditary syphilis will be described in a subsequent chapter.

Papules are found at the nasal orifice, and are sometimes situated partly on the skin and partly on the mucous membrane. They may attain such dimensions as almost to occlude the orifice. They are also found on the septum.

Gummatous Growths occupy for the most part the upper and posterior portions of the nasal passages. They appear in the later stages of syphilis and often in conjunction with similar growths in other parts. They follow the usual course, viz. that of molecular disintegra-

tion and ulceration, and tend to produce considerable destruction of tissue. They also give rise to a copious discharge, purulent in character, and often mixed with blood and *débris*, and possessing a particularly offensive odour. The discharge forms crusts and plugs which much impede the entrance of air. This syphilitic ulceration is the cause of a very serious form of ozæna. The odour is due to decomposition of the secretion, and in advanced stages, to caries and necrosis of the bones. In these latter cases the odour is extremely disgusting. On examining the nose, the mucous membrane is seen to be covered with foul-smelling secretion and crusts; if the latter are removed, a bleeding surface is exposed. Ulcers in various stages may also be recognised, especially on the cartilaginous septum, which, as well as the bony partition, is often perforated. If the cartilage be destroyed, the tip of the nose becomes flattened; in other cases a depression is formed between this part and the lower border of the nasal bones, so that the apex is turned upwards. In very severe cases the necrosis may involve the whole of the vomer, the inferior turbinated and portions of the ethmoid, the nasal processes of the superior maxillæ, and the nasal bones. The floor of the nasal cavity and the lacrymal bones may also be implicated. In the former case a communication is established between the mouth and the nose. Wide-spread destruction of this character is attended with profuse discharge and detachment of many sequestra. The complaint continues so long as any fragments of necrosed bone remain, and its course is often extremely tedious, owing to the number of bones which are liable to become affected. The resulting deformity is considerable, and if the mucous membrane of the olfactory region is much injured by the ulceration, the sense of smell will be permanently impaired, or even completely lost. Ozæna connected with hereditary syphilis will be afterwards described.

With regard to the *diagnosis* of a case of supposed syphilitic ozæna in an adult, this must depend upon the

history and general appearance of the patient. In some cases of so-called "idiopathic" ozæna, the cause is not discoverable, but the patients are usually of a scrofulous habit. In other cases the ozæna is due to lupus. Ozæna, due to syphilis, will always be associated with symptoms of the disease in other parts.

Treatment.—The earlier affections require no special local treatment. Mercury should, of course, be administered, if its use had previously been withheld. When ulceration has taken place, active local treatment must be superadded in order to prevent the extension of the mischief. If the ulcers and crusts are within reach, a solution of carbolic acid in glycerine (one to sixty) should be applied two or three times daily. The vapour of iodine is a useful deodorant. Mercury, in the form of vapour, is the main remedy. A few grains of calomel should be evaporated on a metallic plate over a spirit lamp, and the fumes directed into the nose by means of a funnel. When the discharge is very profuse and fœtid, the free use several times daily of a solution of the permanganate of potash, by means of a syringe or douche-apparatus, will tend to lessen the fœtor. In chronic cases iodide of potassium may be substituted for mercurials, and may be combined with cod-liver oil, iron, and other tonics.

In cases of syphilitic ozæna, the inflammation sometimes spreads from the mucous membrane of the nose to that of the lacrymal canal. The symptoms are those of dacryocystitis, viz. obstruction to the escape of the tears, epiphora, and swelling or abscess of the lacrymal sac. In other cases the affection of the lacrymal canal is secondary to that of the surrounding bones. If the mucous membrane alone be implicated, the symptoms will probably subside under mercurial treatment; but if the canal becomes closed, and an abscess and fistulæ form, surgical interference becomes necessary. The ordinary operation is that of slitting up the punctum and canaliculus, and passing a probe through the stricture in the nasal duct.

If there be evidences of periostitis in the walls of the lacrymal sac and adjoining bones, a free incision should be made through the periosteum. Necrosis of the lacrymal bone and of the nasal process of the superior maxillary, may be associated with the suppuration of the lacrymal sac.

CHAPTER XIV

SYPHILITIC AFFECTIONS OF THE ALIMENTARY CANAL AND OF THE ABDOMINAL ORGANS

Syphilitic Affections of the Alimentary Canal, other than those of the mouth, pharynx, and rectum, are extremely rare. A few cases of tertiary syphilitic lesions of the œsophagus, stomach, and small intestines have been placed on record. There is, however, no evidence that these parts are affected in the earlier stages of syphilis. Mr West, of Birmingham,* has reported a very remarkable case of syphilitic disease of the œsophagus. The patient was a girl, aged twenty-one, who had suffered for some time from various secondary syphilitic affections. There were the ordinary symptoms of stricture of the œsophagus; no sound could be passed and the patient eventually died from exhaustion. The post-mortem examination revealed a constriction of the œsophagus about four inches from its commencement. The constricted portion formed a narrow canal about two and a half inches in length, and barely admitting a No. 4 catheter. The contraction was due to a thickening of the mucous membrane, and to fibrous deposits in the form of bands and bridles. Above this part the tube was much dilated, and the mucous membrane showed many cicatricial marks. Below the constriction the œsophagus was healthy. Evidences of syphilitic disease were found in the liver, and the back part of the throat was the seat of extensive ulceration. Cases of a similar character have been

* 'Dublin Quarterly Journal of Medical Science,' February, 1860.

recorded by Virchow, Dr Maury, of Philadelphia, Dr Clapton, and Dr Morell Mackenzie.

In Dr Morell Mackenzie's case* the patient, aged forty-seven, had contracted syphilis nearly twenty years previously. The difficulty of deglutition had existed for several weeks, and two attacks of a similar character had been previously noticed. The patient was feeble and ill-nourished, but had no cough or expectoration. On auscultating the throat when the patient swallowed a morsel, sounds of regurgitation could be detected opposite the sixth dorsal vertebra; and, on attempting to pass a No. 8 bougie a tight stricture was felt near the beginning of the lower third of the œsophagus. Considerable improvement followed the administration of the iodide of potassium. Dr Mackenzie points out that these lesions are sometimes followed by malignant formations, but that syphilitic disease of the œsophagus, *per se*, never causes pressure on either recurrent laryngeal nerve and consequent paralysis of the vocal cords. In malignant disease these nerves are liable to be implicated.

Two cases of syphilitic disease of the œsophagus have been recently reported by Dr Lublinski.† The first of these occurred in a man, aged twenty-nine, with a history of syphilitic infection ten years previously. There was a small scar on the uvula, but no signs of disease in the pharynx. The stricture, which would admit only a small bougie, was at the level of the sixth dorsal vertebra. After continuous treatment for many weeks with iodide of potassium, the difficulty of swallowing subsided, and a bougie could be easily passed through the stricture. In the second case, the patient was fifty-four years of age, and had contracted syphilis twenty-two years previously. There was a hard ulcerated swelling on the left side of the tongue; the pharynx and larynx were healthy. The stricture was found to be at the level of the fifth cervical vertebra. Considerable improvement was produced by

* 'Lancet,' May 30, 1874.

† 'Berlin Klin. Wochenschrift,' 1883, No. 33.

the daily passage of bougies and the administration of large doses of the iodide of potassium, but the obstruction was not entirely romoved. As a result of the treatment, the swelling of the tongue subsided and the ulcer healed.

It must always be difficult to establish the existence of a causal connection between syphilis and affections of the stomach and small intestines. In this respect the acquired disease differs in a very marked manner from hereditary syphilis. Ulcers of the stomach and small intestines have been noticed in a few cases in which obvious manifestations of syphilis, *e.g.* gummata, were present in other organs; but the mere coexistence of the two appearances may, at least in some cases, have been merely accidental. Cornil,* however, has recorded a case in which gummata were found post-mortem in the stomach and liver. Those in the stomach were situated in the mucous membrane along the small curvature, and consisted of flattened reddish tumours, the largest measuring two inches in diameter. The lymphatic glands at the small curvature were hypertrophied and indurated, and a white, hard, and radiating cicatrix was seen on the peritoneal surface of the stomach. The sub-mucous connective tissue of the stomach generally was much hypertrophied. The symptoms during life were pain, vomiting, and other indications of disturbed digestion. A gummatous tumour existed in the liver. A case of syphilitic duodenal ulcer (cicatrix found on post-mortem examination) has been recently reported by Dr Chvostek.† The symptoms were pain, vomiting, and a feeling of constriction, coming on three hours after eating. There was a history of syphilitic infection three years previously.

With the exception of the rectum, the intestines are very rarely the seat of syphilitic lesions. A few cases, however, have been recorded, in which gummatous growths, ulcers and cicatrices were found in these parts, associated with decided evidences of syphilis elsewhere. There is

* "Syphilis," translated by Drs Simes and White, p. 375.

† 'Vierteljahrsschrift f. Derm. u. Syph.,' Heft 1, 1882.

nothing peculiar in the appearance of such ulcers and their cicatrices, and they cannot be positively distinguished from those due to other causes. The symptoms also do not present any special character; they consist mainly in diarrhœa, with perhaps a little blood in the stools, loss of flesh and strength and gradually increasing cachexia. Neither peritonitis nor perforation of the intestine has been observed. In some reported cases in which symptoms of ulceration of the bowels coexisted with evidences of syphilis, the administration of mercurials and iodide of potassium was followed by improvement and cure.

Syphilis of the Rectum

The rectum is far more commonly affected by syphilis than any other portion of the intestines, and lesions of this part, viz. ulceration, with or without stricture as a result, occur in the three stages of the disease. Hard chancres may occur in the rectum, and the secretions from condylomata around the anus may set up ulceration in the mucous membrane of the bowel. Gummatous deposits, however, and the ulceration to which they give rise, are the most common causes of syphilitic affections of the rectum. Not only true syphilis, but soft chancres near the anal orifice sometimes give rise to ulceration and stricture of the rectum.

With regard to the effect of soft chancres, it has been asserted by a few writers that these are the exclusive cause of "syphilitic contraction of the rectum." My own opinion, however, is that the condition in question is very rarely the effect of soft sores, but I am not prepared altogether to deny the possibility of such a causation. The ulceration may extend from soft chancres near the anus, or the secretion from these sores may be brought into contact with the mucous membrane of the bowel in another way. The result in either case is an ulcer followed by thickening of the submucous connective tissue. After

a time, the cicatrised and thickened portions form a hard ring, which is situated at from one to two inches above the anus. The muscular coat is hypertrophied, and above the constricted portion, the mucous membrane is denuded of its epithelium and glandular layer. The symptoms are—frequent desire to pass stools; discharge of muco-purulent fluid; occasional diarrhœa, loss of flesh and strength and general indications of cachexia. The majority of the cases hitherto reported have occurred in women.

Syphilitic lesions of the rectum may be due (1) to primary ulceration, (2) to mucous papules, or (3) to gummatous nodules or infiltration. With regard to the first cause, a primary ulcer may extend from the vicinity of the anus, or the virus of syphilis may be brought into contact with the mucous membrane of the bowel. Mucous papules are rarely found on the rectal mucous membrane. Condylomata, however, at the margin of the anus are particularly prone to spread and to become ulcerated and fissured; and the mucous membrane of the lower part of the rectum may thus become involved. In the healing of these ulcers, some amount of contraction is likely to take place, but the constriction from this cause would be situated close to the anus and only slight in character. There would likewise be cicatrices or other marks of ulceration around the anus. It is, however, supposed by some authors that ulceration and stricture of the rectum are generally due to the development of condylomata within the bowel, and their subsequent stages of ulceration and cicatrisation.

Gummatous deposits and infiltration of the submucous tissue are the most common causes of syphilitic ulceration and stricture of the rectum. Fournier,* however, dissents from this view, and thinks that in the majority of cases of stricture of the rectum in syphilitic subjects, the condition is due to an infiltration of the ano-rectal

* 'Lésions tertiares de l'anus et du rectum,' and E. Godebert, 'Essai sur es rétréc. syph. du rectum,' Paris, 1873.

walls with a new formation of unknown structure, which undergoes fibroid changes and produces contraction of the calibre of the bowel. He states that, as a general rule, neither ulceration nor cicatrices can be found in the rectum in cases of syphilitic stricture, and hence he infers that the morbid changes involve the submucous tissues rather than the mucous coat. Zeissl,* on the other hand, states that the lesion is due to gummatous infiltration of the submucous tissue. The disintegration of the deposit causes ulceration of the free borders of the longitudinal folds, and of the mucous membrane between adjacent folds. When cicatrisation takes place, some of these folds are either obliterated or become adherent to each other: in either case, the calibre of the bowel is reduced. Zeissl further states that distinct gummata are sometimes developed in the submucous tissue, and are followed by disintegration, ulceration, and severe stricture. He reports a case of this nature, occurring in a man presenting also syphilitic nodes and sarcocele. Bäumler's† view of these cases is that strictures of the rectum in young women are most frequently due to chancre-cicatrices; in old women and in men they may be due to cancer or to syphilitic infiltration. Gummata and the strictures resulting from them occur higher up in the rectum; chancres are usually less than two inches from the anal orifice. Virchow (as quoted by Bäumler) leaves the question unsettled, as he has had no opportunity of examining the disease in its early stages. Mr Allingham, my colleague at St Mark's Hospital, believes that syphilitic stricture of the rectum is almost invariably the result of tertiary lesions, and my own opinion, as stated above, coincides with this view.

It is probable that gummatous deposits in the rectum do not give rise to any particular symptom until disintegration and ulceration take place. When these changes are in progress, the patient will complain of a sensation of

* 'Lehrbuch der Syphilis,' p. 511.

† 'Ziemssen's Handbuch der spec. Pathol. u. Therapie,' 3 Bd., p. 205, ii Auflage.

fulness in the bowel and frequent desire to go to stool, the motions being small and scanty and often consisting merely of sero-purulent or gelatinous matter. As the ulceration continues there will be more and more pain in the bowel, increased after defæcation, spasm of the sphincter, and alternating attacks of diarrhœa and constipation. Pain in the legs and back, loss of appetite, and in some cases vomiting will now be complained of. When cicatrisation is in progress and contraction is taking place, symptoms due to the mechanical obstruction will be superadded to those just mentioned. These are more or less obstinate constipation, with occasional attacks of diarrhœa, distension of the abdomen, loss of appetite, etc. Abscesses sometimes form above the strictured portion, and make their way by the side of the bowel to the surface, and thus cause fistulæ.

On examination, when the disease is in the early stage, the ulceration is generally found to be within two inches of the anus. The ulcer varies in size, its surface is red and covered with more or less purulent matter ; sometimes the whole circumference of the bowel is thus affected. The ulceration may involve the muscular coat and destroy a considerable portion of the internal sphincter. When contraction has taken place, the calibre of the bowel will be found more or less reduced ; in very severe cases even a small sound is passed with difficulty. Above the stricture the rectum is much dilated.

The *diagnosis* of stricture of the rectum is for the most part easily made, but the exact cause of the affection is often difficult to determine. Syphilitic stricture is chronic in its course, and therein differs from cancerous stricture of the rectum. In cancer, also, hard nodular masses can be felt in the walls of the bowel, and the pain is always very severe. It is probable that strictures of the rectum are often due to tuberculous deposits and ulceration. The history of the case and any coexisting symptoms will aid in establishing the diagnosis.

Treatment.—In the early stages, syphilitic ulceration of

the rectum is curable, but if the calibre of the bowel be much reduced, relief of the urgent symptoms is all that can be attained. Constitutional treatment by mercury or iodide of potassium should always be tried; calomel ointment should be applied to the ulcer and the bowels must be kept open by some mild aperient. A non-stimulating diet and rest in the recumbent position are necessary adjuncts to the treatment. If there be much irritation morphia should be added to the calomel ointment. When stricture exists, attempts should be made to dilate it by means of a rectum bougie, used every other day for some weeks. If no good result be obtained, and the infiltration be very dense and resistant, the thickened portion should be divided in several places with a bistoury or a hernia-knife, care being taken not to cut too deeply. The use of the bougie is then to be resumed. If these measures fail to procure relief, the question of colotomy will have to be considered.

Syphilitic Affections of the Liver and Pancreas

Hepatic affections connected with syphilis have been observed from a very early period, but it is only during the last thirty years that the lesions have been carefully studied and classified. Of all the internal organs the liver is the one in which changes due to syphilis are most frequently seen, and these occur during the secondary and tertiary periods, but principally during the latter stage. Jaundice sometimes accompanies the development of the syphilitic exanthemata; and in the cases in which it is a prominent symptom it has been observed that evidences of decided constitutional disturbance, viz. general depression, headache, vomiting, and fever were likewise present. The symptom is neither very marked nor of long duration, the skin regains its normal colour in three or four weeks. As a matter of course, while it lasts, the yellow tinge modifies the appearance of any existing roseola. Various

theories have been propounded as to the cause of this symptom. Congestion of the liver, compression of the biliary ducts by swollen glands, the propagation of inflammation from the intestinal mucous membrane to the biliary ducts, have all been considered to play a part in its causation, but it would seem that congestion is the most probable cause. The patients complain of pain or uneasiness in the hepatic region, and the liver may project one or two fingers' breadth beyond the margin of the ribs. The majority of the cases have occurred in women. In a few instances the jaundice of patients, the subjects of secondary syphilis, has been found to be due to acute yellow atrophy of the liver, a condition which is not connected with syphilis.

Far more important affections of the liver are not infrequent in the later stages of syphilis. There are several distinct morbid processes, which may be variously combined with each other. These are:—1. Chronic interstitial hepatitis or cirrhosis. 2. Fibroid and gummatous infiltration. 3. The development of gummata. 4. Amyloid degeneration, which, however, is not characteristic of syphilis, though often found associated with severe tertiary lesions.

1. **Chronic interstitial hepatitis or cirrhosis** rarely involves the whole liver, but is generally confined to a few parts. Cornil states that the disease consists in the local formation of fibrous tissue; Glisson's capsule becomes thickened, and fibrous adhesions are formed between the liver and neighbouring parts. The new connective tissue does not, however, as in alcoholic cirrhosis, envelop each lobule; it divides the liver into roundish or irregular portions or lobes, so that the organ somewhat resembles the kidneys of young animals. These lobes are separated by depressions or more or less deep furrows. The liver thus becomes much reduced in size, and so much altered in shape that it may be difficult to distinguish its various parts. The left lobe is drawn towards the right. When cut into, constricting bands of fibrous

tissue, which creak under the knife, are found to be the cause of the lobulated condition of the organ. Many of the hepatic cells are more or less atrophied and granular, while others are normal. The surface may also present numerous depressions and cicatrices, due to the absorption of gummata, and adherent shreds of fibrous tissue, the remains of perihepatitis. The nodules and projections can sometimes be felt during life, especially if, as often happens, the liver assumes a spherical shape and projects below the margin of the ribs.

The symptoms of syphilitic cirrhosis resemble those of ordinary cirrhosis. Other symptoms of constitutional syphilis will coexist, and in advanced cases there will be ascites, wasting, and probably chronic peritonitis, and the passage of dark urine containing large quantities of abnormal colouring matter. The disease pursues a chronic course, and thus differs from cancerous affections of the organ. In cirrhosis due to alcohol the nodules are smaller and more uniform in size, and much more numerous ; the cut surface is more homogeneous, and the fibrous septa are less thick. The superficial furrows are not so deep, and the alterations in form are less marked.

2. **Gummatous formations** are easily distinguished from other growths in the liver. They are found in two forms : (1) that of a general or diffuse infiltration, a condition seen in children the subjects of hereditary syphilis ; (2) as isolated growths. The former will be described in the chapter on infantile syphilis.

Gummatous nodules are of somewhat frequent occurrence in the liver in severe cases of constitutional syphilis. They are often found associated with the fibroid induration, and more rarely scattered throughout an otherwise healthy parenchyma. They are rounded in shape, and vary very much in size ; some are minute, no larger than a pin's head or millet seed, whilst the largest attain the size of an egg, and there are many intermediate sizes. They may be either deep seated or superficial, and projecting as roundish elevations beneath the capsule. They are

also often found beneath the depressed cicatrices on the surface. When incisions are made through the liver, the gummata are seen to be of a yellow or yellowish-white colour; the central part is homogeneous, soft, and caseous, while the periphery is made up of dense fibrous tissue which sends out prolongations in various directions. According to the stage of development, the surface is either dry or covered with a milky fluid. Absorption may take place, and result in a fibrous cicatrix, the yellow caseous portion having entirely disappeared. The thick fibrous zone has a marked tendency to contract; it would appear to be a special formation, and not merely a condensed portion of the proper structure of the liver. The yellow substance is composed of embryonic tissue, containing in its interstices multitudes of small cells and round nuclei, those situated in the centre being often more or less atrophied. The growths are but sparingly supplied with blood-vessels, some of which are partially obliterated.

Gummatous growths in the liver, and the changes to which they give rise, were for a long time confounded with tubercles and cancer. Tuberculosis of the liver is never primary; there is always a pre-existing tuberculosis in other organs. It shows itself in the form either of translucent miliary granulations or of yellowish masses, as large as a pea or bean. It does not give rise to deformities of the organ, or to those deep furrows which are characteristic of syphilis. With regard to cancer, the nodules are reddish on section and they are not, as in syphilis, surrounded by a firm zone of fibrous tissue. They are often flattened or even excavated at the surface of the liver, and they are abundantly supplied with blood-vessels.

The *symptoms* of gummata of the liver vary according to the extent to which the organ is implicated and the duration of the case. If the liver be much enlarged and the nodules be near the anterior surface, they may be detected on palpation. Jaundice is sometimes observed.

As the case proceeds, pain or discomfort in the region of the liver, dryness of the skin, derangement of the digestive functions, ascites, albuminuria, emaciation, vomiting, and diarrhœa generally supervene. There is sometimes hæmatemesis towards the close. The affection is usually of long duration. Other signs of syphilis, such as gummata of the skin, cicatrices in the throat, and bony lesions, almost invariably coexist.

The *prognosis* of syphilitic cirrhosis of the liver and of gummatous growths is for the most part unfavorable, especially if the liver be much contracted. Ascites and diarrhœa are serious symptoms. If the liver be enlarged, some benefit may be expected from treatment, provided that the general condition of the patient is not very unfavorable.

Treatment.—Iodide of potassium is the remedy upon which the most reliance is to be placed, and it must be given in large doses and for long periods. It is well to begin with doses of gr. v three times a day with gr. ij Ammon. Carb., and gradually to increase the iodide by adding a grain or two to each dose, until 60 or even 100 grains are taken every day. This quantity may be continued for some weeks unless iodism be produced. The iodide should be given dissolved in Decoct. Sarsæ Comp., the quantity of the latter being increased in proportion. When the stomach rejects these large doses of the iodide, it is well to give it in some effervescing fluid, as seltzer water, &c.

Amyloid degeneration of the liver sometimes occurs in patients suffering from severe syphilitic affections, such as caries or necrosis with long-continued suppuration. Like acute yellow atrophy, however, the lardaceous change is not characteristic of syphilis; it is met with in other chronic diseases, *e.g.* pulmonary consumption, and in various disorders of nutrition. The most prominent symptoms are: great enlargement of the organ, a feeling of pressure and tension, ascites, clay-coloured fæces and anæmia. Enlargement of the spleen and albuminuria generally coexist. The condition is one in which little

benefit can be expected from medicines, but iodide of potassium or iodide of iron may be tried.

With regard to the *pancreas*, very few observations have been made of any changes presumably due to syphilis. Lancereaux mentions a case in which gummatous growths in the pancreas coexisted with similar tumours elsewhere. He also states that in several cases of visceral syphilis, he has found the pancreas in a condition of induration. Enlargement of the pancreas, due to hypertrophy of the interstitial connective tissue, is not unfrequent in cases of hereditary syphilis.

Syphilitic Affections of the Spleen

But few examples of syphilitic changes of the spleen have been placed on record. In the eruptive stage of syphilis, some amount of swelling ordinarily takes place; at a later stage, formation of fibrous tissue, leading to thickening, induration, and subsequent contraction, has been observed. Hypertrophy of the spleen is also met with, and in cases presenting no appearances of amyloid disease. In eight cases of this kind, the average weight of the spleen was nineteen ounces. Gummata are rare. They present the same appearances as those found in the liver, that is, they consist of yellowish nodules, varying in size from that of a pea to that of a walnut, roundish in shape, and circumscribed by an indurated fibrous zone. Amyloid degeneration has been found in severe cases of constitutional syphilis.

Syphilitic Affections of the Kidneys

It is probable that the kidneys are more frequently affected in syphilis than is generally supposed, but it is doubtful whether the syphilitic poison *per se* is sufficient to produce acute Bright's disease. Other well-known causes of kidney affections frequently coexist in cases of

syphilis, and it is difficult to estimate the part played by each. It is well known that amyloid changes are often found in the kidneys of syphilitic subjects. The renal lesions of the secondary and tertiary periods include interstitial nephritis and gummatous formations. The former is characterised by gradual increase of the connective tissue of the stroma, and atrophy of the tubular elements. The kidneys eventually become smaller than usual, owing to the contraction of the intertubular growth. More or less deep depressions are found on the surface to which the capsule firmly adheres. On section, the appearances are those of ordinary interstitial nephritis.

Gummatous formations are found, though rarely, in the kidneys, and appear either as distinct nodules, or as fibroid cicatrices and caseous patches. In the majority of the cases the gummata are found in the cortical portion of the kidney and near the surface; they take the form of rounded yellowish masses, varying in size, but rarely exceeding half an inch in diameter. Fibrous patches or cicatrices on the surface of the kidney generally coexist, and are in all probability the remains of gummatous growths. The liver is always simultaneously implicated.

The *symptoms* of interstitial nephritis, due to syphilis, resemble those of the same affection due to ordinary causes. Albuminuria, œdema or anasarca are generally observed. The syphilitic origin of the disease can be inferred only when decided evidences of syphilis are present. These latter, however, may be very obscure. If enlargement and deformity of the liver coexist with the albuminuria, the nature of the case will be rendered evident. Amyloid degeneration of the kidney, due to syphilis, presents no peculiar features. As the case advances, there is, however, a more marked degree of atrophy than is associated with the same condition due to other causes.

The *prognosis* in all cases of syphilitic disease of the kidney is unfavourable, but in the early stages some relief to the symptoms may be expected from full doses of iodide of potassium.

CHAPTER XV

SYPHILITIC AFFECTIONS OF THE ORGANS OF THE THORAX, AND OF THE ARTERIES AND VEINS

The Lungs.—Pulmonary lesions occurring in syphilitic subjects are not necessarily connected with syphilis, but there are undoubtedly some affections of the lungs which are directly due to the syphilitic virus. They appear in the earlier as well as in the later stages of the disease.

In the earlier stages, irritation of the bronchial mucous membrane accompanies or precedes the eruption in some cases, and a sudden and somewhat severe attack of bronchitis is occasionally observed. When the eruption appears, the chest-symptoms either subside altogether or become much lessened. This so-called syphilitic bronchitis appears to be analogous to the same symptom which so often accompanies the eruptive stage of the exanthemata. In other cases, the sudden disappearance of a syphilitic eruption has been followed by symptoms of bronchitis and fever. The bronchitis is sometimes persistent, and is attended with copious muco-purulent expectoration, loss of flesh and strength, night-sweats and hectic, and the symptoms may closely resemble those of phthisis. Examination, however, will fail to detect any signs of cavities or of consolidation. Dr Stokes has pointed out that the principal ground for the diagnosis between syphilitic irritation of the bronchi and tubercle is the want of accordance between the physical signs and the constitutional symptoms. Dr Walshe mentions one source of difficulty which may arise in these cases; the infra-clavicular ribs

and clavicle may become thickened from periostitis and produce dulness on percussion, which cannot positively "be distinguished from that of tubercle within the lung. Here the observer must wait for events to clear up the diagnosis."

The syphilitic lung-affections which occur in the later stages of the disease take the form of fibroid induration and gummatous formations, the latter being the more characteristic of the two. Either of these conditions may occur in the lungs alone, or may be the result of extension from the bronchi or the pleura.

When the disease extends from the bronchi, it generally takes the form of callous induration of the pulmonary tissue, some of the bronchial tubes being at the same time narrowed from cicatricial contraction, and the larynx and trachea being similarly implicated, or, in some cases, appearing normal. This fibroid induration attacks the base or root of the lung, and not the apex; it exhibits no tendency towards softening or caseous changes, and it is generally associated with peculiar puckerings of the pleura. It is not spread over a whole lobe, but affects small nodules. The air-cells are not primarily affected, the disease consisting in induration of the connective tissue surrounding the branches of the pulmonary and bronchial arteries.

Gummatous growths, in various stages of development, are found in the lungs. They differ from tubercles in not occupying the apices; their most frequent seat being the middle and lower portions of the lungs. They are generally few in number, and white or yellowish in colour; they vary in size from that of a pea to that of a walnut. It sometimes happens that a gummatous infiltration of the wall of the thorax invades the pleura, and extends to the lung. Fournier has pointed out that whereas tubercles of the lung tend to become confluent, the gummata generally remain isolated, and when softening takes place they do not break down altogether, owing to the firm fibrous zone by which they are surrounded.

The *symptoms* of gummata of the lungs resemble those of pulmonary phthisis, but their course is less rapid, and in some cases it has been observed that notwithstanding the severity of the local symptoms the strength of the patient was less affected than in ordinary cases of consumption. The fact that the upper lobes of the lungs are generally unaffected in such cases is one of considerable importance as regards diagnosis. The effect of treatment will likewise aid in indicating the true nature of the case. Some authorities have alluded to the frequency with which laryngeal ulceration coexists with pulmonary syphilis. It must not be forgotten that patients suffering from the laryngeal affection in a severe form often exhibit many of the symptoms of phthisis; but a careful examination will prove that their lungs are free from disease, and all the symptoms will disappear under anti-syphilitic treatment. The diagnosis will, of course, be materially aided by the history of the case, and the almost invariable coexistence of other symptoms of syphilis.

Miliary tubercles are sometimes found in the lungs associated with gummatous nodules, in various stages of growth and development, and it may therefore be admitted that syphilis is one cause of pulmonary tuberculosis. Dr Aitken's experience leads him to believe that syphilis is an important agent in the production of pulmonary disease among soldiers, and especially among the Household troops.

In any given case of pulmonary disease of which syphilis is supposed to be the cause, iodide of potassium is the remedy which is mainly indicated. For cases of syphilitic bronchitis mercury is to be preferred. Quinine, cod-liver oil, and other tonics may also be required if hectic, emaciation, and other evidences of debility be present.

The Heart.—Syphilitic affections of the heart occur in the forms of inflammatory induration of the muscular substance and of gummatous formations. The two conditions may coexist. In a very marked case recently

recorded by Professor Teissier, the patient, a woman, aged twenty-seven, had suffered from syphilis for about three years, but was apparently in good health until the day before her death, when she had an attack of colic and dyspnœa. She died in a state of asphyxia at the Hôtel Dieu. On post-mortem examination signs of endocarditis were found in both ventricles, but especially in the left, the muscular structure of which, however, was almost normal. The wall of the right ventricle and the inter-ventricular septum were much changed. The former presented scarcely any trace of muscular tissue, having been converted into a grey fibrous layer of a firm consistence, and creaking under the scalpel, and exhibiting on section small whitish masses as large as lentils, which contrasted with the grey semi-transparent tissue in which they were imbedded. The septum contained similar white masses. The only other lesions referable to syphilis, viz. small gummata and changes in the coats of the vessels, were found in the kidneys. Virchow believes that the two processes, the diffuse interstitial myocarditis and the gummatous formations, are both the results of syphilis, and that they may occur independently of each other. Other pathologists regard the interstitial inflammation as due to the presence of the gummatous nodules. The former opinion would appear to be correct, inasmuch as in a few cases interstitial myocarditis was not accompanied by any gummatous formations.

In Prof. Teissier's case there were no marked symptoms of any heart-affection beyond slight difficulty of breathing and palpitation on active exertion.

Syphilitic Affections of the Arteries and Veins.—Affections of the arteries as a result of syphilis, were alluded to by the older authors on this disease. They believed that the changes it produced were sometimes the cause of constriction and occlusion of the arteries, and also of aneurism, but they appear to have attributed the arterial lesions to the extension of disease from neighbouring parts. Lancisi, for instance, describes cases in which

bony tumours caused compression of arteries, and afterwards, by the suppuration to which they gave rise, produced a thickening and dilatation of the coats of the vessels. Morgagni attributed to syphilis certain changes in the aorta, and especially some aneurismal tumours of that vessel. The prevailing notions on this subject remained, however, very ill-defined until Virchow (1858) described cases of probable syphilitic deposit in the heart, and, alluding to the similarity existing between fatty metamorphosis of a gummatous growth and atheromatous changes in endarteritis, suggested that the latter might sometimes be of a syphilitic character. He mentions another case of a girl in whom numerous indurated and atheromatous patches were found in the aorta, with well-marked signs of syphilis in several organs. Dr Wilks, in 1863, recorded a case of cerebral disease due to syphilitic arterial lesion, and since that time many cases of syphilitic disease of the arteries of internal organs have been placed on record.

The arteries of the brain are the most frequent seat of these lesions, which have been carefully studied and described by Heubner. He states that the changes consist in a proliferation of cells and nuclei, starting from the endothelium of the intima, and taking place between this latter and the fenestrated membrane, the deposit being gradually converted into embryonal connective tissue. This proliferation usually begins on one side of the vessel only, where it forms a small tumour projecting into the canal, but in course of time it involves the whole circumference of the vessel. When the process is at its height, inflammation of the vasa vasorum causes the white blood-corpuscles to pass into the tissue of the adventitia and muscular coat and thence into the fenestrated membrane, so that on transverse section the tissue of the artery exhibits a remarkable resemblance to granulation-tissue, as found in syphilitic growths in all vascular structures.

In subsequent stages the new formation undergoes

either organisation or involution. In the former case new capillaries are developed in the swelling, the endothelium regains its normal activity and forms a new fenestrated membrane, so that the new formation lies between this latter and the original membrane. The process thus comes to a standstill, but the result is considerable diminution of the calibre of the artery, which, however, still permits a thin current of blood to pass through it. In the second case the cellular deposit in the intima is converted into fibrous connective tissue or cicatricial tissue. This process is, of course, attended by contraction, with the result of further diminution in the vessel's calibre, and may lead to complete occlusion after previous thrombosis. As a final result, the fenestrated membrane is converted into ordinary connective tissue, the cells of the muscular coat atrophy and disappear, and all that remains of the original vessel is a thin fragile strand, composed of connective tissue.

It is a remarkable circumstance that the entire arterial system is not uniformly affected by the process in question. The changes are observed to occur to a marked extent only in certain spots. The carotid arteries and their ramifications are the most prone to be affected. The consequences are more or less decided narrowing or complete occlusion of the canal of the affected vessel. This latter process may take place in a gradual manner, or suddenly, if aided by the formation of thrombi.

Such is Heubner's description of syphilitic arteritis. The results of such lesions, occurring in the arteries of the brain, will be described in the chapter on Syphilis of the Nervous System. Many cases have now been recorded which place the nature of the affection, and its dependence upon the syphilitic poison, beyond a doubt. They likewise prove that these arterial lesions not uncommonly occur at a much earlier period after infection than was formerly supposed. They have been noticed as early as the fifth or sixth month, and it is remarkable that they are especially frequent in cases in which secondary sym-

ptoms are almost if not altogether wanting. In several instances in which there was softening of the brain aud the cerebral arteries were found thickened and translucent, and their canals occluded by fibrinous coagula, there was no sign of syphilitic disease of any other organ. In some cases the arterial lesions resulted in the formation of numerous small aneurisms. The arteries of the lungs are sometimes affected, but far less frequently than those of the brain. Arteries in other parts of the body are occasionally invaded. Zeissl has recorded a case of obliteration of the left brachial artery as a result of syphilitic arteritis. The deposit took place in the adventitia and advanced gradually until the tunica intima was reached, and the vessel became completely closed. When the patient first presented himself, his left elbow-joint was bent at an obtuse angle, and could not be straightened; it was also much reduced in size, and much weaker than the right. Along the inner edge of the biceps, and extending from the surgical neck of the humerus to its middle, was a tumour as thick as a man's thumb, eight ctm. in length, resembling a string of large pearls, feebly pulsating and corresponding in direction with the course of the brachial artery. Mercurial ointment was applied and iodide of potassium given internally, with the result that the tumour almost entirely disappeared in about four months, but the artery was completely obliterated and the collateral circulation was subsequently developed.

In connection with this subject it remains to consider the relation which syphilitic disease of the arteries bears to aneurism. Dr Aitken says that the tendency to aneurismal dilatations and cicatrix-like loss of substance in the lining membrane of the great vessels in *young* subjects, who are or have been severely affected with syphilis, is a point in morbid anatomy which requires yet to be investigated. The fact that aneurism is more common among young soldiers than among any other portion of the community has been clearly demonstrated. Inspector General Dr Lawson has calculated that aneurism is eleven times

more frequent among soldiers than civilians. Dr Parkes has pointed out that the two most common causes of heart-disease in the civil population are rheumatic fever in young subjects, and renal disease in older people. The latter cause does not operate in the army and the former is insufficient to account for the facts. Many soldiers, suffering from aneurism, have never had any symptoms of rheumatism.

Military statistics show that syphilis is a potent factor in the production at least of atheroma. In 114 post-mortem examinations of soldiers dying at Netley Hospital, atheroma of the aorta was found in 22 cases. "Of these, 17 had a syphilitic history, 1 was doubtful, and 4 had no syphilis, but had heart and lung diseases. Of the whole 114 cases, 78 had no syphilitic history, and had 4 cases of atheroma, or 5·1 per cent.; 28 had a marked syphilitic history, and 17 had atheroma, or no less than 60·7 per cent. This seems very strong evidence as to atheroma. With respect, however, to actual aneurism, no corresponding analysis of cases has been made, and therefore at present the effect of syphilis must be considered uncertain, but it is quite clear, even admitting its influence, that there is no reason to think that syphilis prevails more among soldiers than among the civil male population of the same class. It is therefore unlikely that an excess of syphilis, if it really occurs among soldiers, and if it actually predisposes to aneurism, as seems probable, could produce eleven times as many aneurisms as in civilians. Mr Myers has given evidence that in both the army and navy, aneurism is sometimes not preceded by degeneration of the arterial coats, and in these cases mere improper exertion seemed to produce it."* It would, therefore, seem that the *prevalence* of aneurism among soldiers must be due to other causes besides syphilis, and it is probable that a very important share in the causation must be assigned to the great bodily exertion (often rapid and long continued, and

* Parkes' 'Practical Hygiene,' p. 614.

performed under unfavorable circumstances) which is required from a soldier. It may be that syphilis leads to a weakened state of the vessels, which in ordinary subjects would not go on to aneurism, the development of which is promoted in soldiers by the special exertions incident to military duties. Dr Parkes describes how, in the medical wards at Netley, in one hour in the summer, when the hospital is full, almost all the combinations of heart-affections are to be seen. "It has appeared to me," he says, "that if anything gives the tendency to heart-affections, then the dress and the accoutrements come in as accessory causes, and prevent all chance of cure. In some cases there is no valvular disease, and not much hypertrophy of the heart, but a singular excitability, so that the heart beats frightfully quick on the least exertion." It can be easily imagined how, in such cases as these, aneurism may become developed if there be any coexistent condition tending to impair the strength and elasticity of the arterial coats, already exposed to a severe strain. Dr Aitken states that in the majority of syphilitic subjects examined by him in the post-mortem room at Netley, the coats of the thoracic aorta were impaired by characteristic changes—changes which are uncommon at so early a period of life as thirty-two years of age, and which, he has every reason to believe, were due to syphilis—a *syphilitic endoarteritis*. "The changes were obvious, viz. cicatricial-like loss of subtance of the inner coats, small local dilatations of the artery, and in several cases aneurismal expansions, one as large as an orange and which proved fatal. Fifty per cent. at least of these aortic aneurisms occurred in soldiers with syphilitic infection, and with no other ascertainable conditions present."* The evidence, therefore, seems very strong in favour of the existence of a causal connection between syphilis and aneurism, but more facts are required for the solution of the question as to whether in civil life aneurism can be traced in an especial manner to

* Aitken, 'Science and Practice of Medicine,' vol. ii, p. 655.

syphilis. Considering the great frequency of cases of the latter disease and the comparative rarity of the former, it would appear that the cooperation of other causes is necessary for the production of aneurism.

As regards the veins, we have no certain knowledge of any particular lesion attributable to syphilis, and Lancereaux is inclined to regard the thrombosis sometimes found in the veins in cases of syphilis, rather as the effect of the cachectic condition than of any specific action of the virus. In a few cases that have been recorded, the symptoms associated with the phlebitis and the thrombosis seemed to point to a dependence upon syphilis. It appeared as though there were gummatous formation and infiltration in the connective tissue surrounding the vein. The swelling subsided under the administration of iodide of potassium, but the thrombosis remained. Von Langenbeck records two remarkable cases in which gummatous growths appeared over the course of the internal jugular and femoral veins, and the tumours became more prominent than those of a like nature observed in connection with arteries. It was a very remarkable fact that, in these cases, the corresponding arteries were perfectly healthy. In both cases, the growths appeared to originate from the connective tissue surrounding the vein and from its outer coat; at the same time the internal coat of the vein was the seat of morbid changes; it had lost its vitality and become brittle, while the canal of the vessel was almost completely filled up by a greyish-white, firmly adherent, decolourised thrombus.*

* Langenbeck, 'Archiv für Klin. Chir.,' 1881, Bd. xxvi, S. 279-80.

CHAPTER XVI

SYPHILITIC DISEASES OF THE PERIOSTEUM, BONES, JOINTS, CARTILAGES, MUSCLES, ETC.

During the course of syphilis, affections of the periosteum and bones occur next in frequency to those of the skin and mucous membranes, and their development is generally later than that of the superficial manifestations. The periosteum, or the bone, or both these parts at the same time may be the seat of syphilitic inflammation.

Pains in the bones often occur at a very early period, viz. during the eruption-fever. These pains, which are sometimes of a very severe character, are at first ill-defined, but are soon referred to certain parts and especially to the scalp and the shin-bones. There is no swelling, but the affected parts are very sensitive to pressure, and the pains are probably due to inflammatory œdema of the periosteum, of a slight and transitory character. They may be altogether absent during the day, and their occurrence at night or during the evening is probably due to the exacerbation of the fever. It has been observed that patients in whom there are no febrile symptoms suffer but little, if at all, from these pains in the bones; whereas if the fever be high, the pains are usually severe. They generally disappear with the subsidence of the febrile symptoms.

The later manifestations of the effects of syphilis upon these parts take the form of periostitis and ostitis, and there are several varieties of these affections, which may occur independently or as a result of syphilitic lesions in neighbouring parts.

Syphilitic periostitis is the earliest of the lesions connected with the bones, and it may appear as early as the third month, associated with a roseolous or papular eruption. The bones whose periosteal covering is most frequently affected are the cranial bones, the clavicles, the sternum, and the tibiæ. The first symptoms are pain and swelling in the affected part. The pain is more marked at night than during the day, and is often of a very excruciating character. The swelling is due to the effusion, under the periosteum, of a gelatinous fluid containing numerous round cells. Similar cells infiltrate the deeper layers of the periosteum, and the neighbouring connective tissue is more or less œdematous. The superficial layer of bone is slightly involved; the mouths of the Haversian canals are enlarged and filled with reddish-grey gelatinous material. The course which the symptoms now take varies in different cases. The effusion may become absorbed, and the parts may return to their original condition; or suppuration may take place and be followed by necrosis of the subjacent bone. The active symptoms may slowly subside, and a chronic condition become established. Molecular disintegration of the deposit may then take place, or the deposit may become ossified. The conversion of the effusion into a gummatous mass is another result of syphilitic periostitis.

Next to resolution, ossification is the most common result of syphilitic periostitis. The ossification may be of a diffuse character, that is to say, it may extend for several inches over the surface, but more frequently it occurs in circumscribed areæ, and results in the formation of small, roundish, flattened, or convex tumours. These are at first firm, but elastic to the touch, and the skin covering them is unaltered in appearance and is freely movable. Ossification sometimes goes on very slowly, and appears to begin in the round cells of the effusion nearest to the surface of the bone. In other cases the process is more rapid, and the periosteal swelling soon loses its elasticity and is converted into a hard bony mass,

a node, osteophyte or exostosis. The growths are at first but slightly adherent to the subjacent bone, but as time goes on, and the bone participates in the inflammation, they become closely connected with it. These osteophytes are the result of the inflammatory irritation of the periosteum and surface of the bone.

Suppuration is a less common termination of syphilitic periostitis. Its occurrence is indicated by increase of pain and swelling, and diminution of the tension of the part. The integument becomes œdematous, the patient is feverish, and there may be one or several rigors. The skin assumes a livid red colour, and becomes adherent to the swelling which presents a distinct feeling of fluctuation. If the case is left to itself, the periosteum becomes more and more separated from the bone, and the latter, cut off from one source of its nutrient supply, either partially or completely perishes. At the same time the pus finds its way towards the surface, and small openings or ulcers are formed. These remain open until the necrosed portions of bone are detached. In other and less severe cases, the bony lesion is of a more superficial character; the periostitis is accompanied by a superficial caries.

The periosteum is often the seat of gummatous formations. These are more or less circumscribed, soft and elastic swellings, of a whitish or yellowish colour, and varying in consistence, some being almost fluid and others of a more solid character. In the early stages it is difficult to distinguish these from swellings due to inflammatory exudation, as occur in syphilitic periostitis above described; while, on the other hand, the occurrence of ossification does not exclude the possibility that the growth in which the process began was of a gummatous nature. As a general rule, however, gummata of the periosteum, as elsewhere, undergo a process of disintegration or absorption, the central part being the first to disappear, so that a small pit or depression is formed in this portion of the swelling. The pressure exercised by the tumour leads to inflammatory atrophy of the subjacent bone, and a more

or less deep excavation is formed. Such depressions are often seen on the bones of the skull. They are sometimes surrounded by bony growths or osteophytes, and the deeper the depression, the more prominent is the surrounding bony circle. Gummata, either isolated or in groups, are sometimes found between the dura mater and the bones of the skull, and they produce the same effects upon the bone as in other situations. Sometimes a gummatous formation on the exterior of the skull corresponds with a similar growth beneath the bone, and perforation occasionally takes place.

Syphilitic Affections of the Bones

The bones may be affected as a result of the periosteal lesions just described, or the lesions may begin in the bones themselves. These latter changes may be described under the heads of chronic ostitis and its consequences, and gummatous osteo-myelitis.

In chronic ostitis the inflammatory new formation is infiltrated into the connective tissue surrounding the vessels in the Haversian canals and medulla. The gelatinous tissue more or less fills the cavities of the cancellated structure, the Haversian canals gradually become wider, and the affected portion of the bone is rendered soft and porous. If the process be now arrested, absorption may take place and the bone may gradually return to its normal condition. The deposit may, however, become ossified. The medullary structure and the Haversian canals are then more or less filled up with a compact bony mass, and at the same time bony formation usually takes place on the surface. The bone thus becomes thicker and heavier, its consistence may almost resemble that of ivory. An opposite condition is sometimes induced as a result of chronic syphilitic ostitis. The deposit of gelatinous connective tissue is neither absorbed nor ossified; but while the medulla is extremely vascular and is filled

with newly formed cells, the cortical portion becomes gradually absorbed and reduced to a thin layer. The bone is thus rendered soft and yielding, and has a yellowish appearance on section.

Caries and necrosis may be the further results of syphilitic ostitis. Caries is often seen in the cranial bones. The diploe are infiltrated with a soft gelatinous deposit which becomes semi-purulent. The tissue of the bone is dissolved and softened, and the external table is finally perforated. These deposits may be either circumscribed by a thickened layer of bone covered by vascular granulations, or more or less diffused for some distance between the tables of the skull. This affection in its severe form constitutes the so-called "worm-eaten caries."

Syphilitic necrosis, according to Virchow, usually proceeds from within outwards. A line of demarcation is formed, and a portion of necrosed bone, with enlarged pores and a worm-eaten appearance, is detached from the living bone. The edges of the latter, which are more and more indurated, become raised by the deposit of fresh layers of bone, and project beyond the necrosed portion. Similar lesions occur at a greater or less distance from each other, and their coalescence gives rise to extensive mischief and destruction of the cranial arch. Symptoms of irritation of the periosteum are at first either entirely absent or only slightly marked. The sequestra present numerous orifices leading into short, irregular canals which communicate with each other; this appearance is characteristic of syphilitic necrosis. In necrosis due to other causes, the sequestrum is smooth, polished and compact (Lancereaux). This syphilitic necrosis is due to gummatous deposit in the cancellated structure. When the process is somewhat advanced in the bone, the periosteum and the soft parts covering it become implicated and inflamed. Abscesses form, which eventually find their way to the surface, but not always at the spot corresponding to the seat of the lesion. Sinuses are often formed,

owing to the pus burrowing in the loose connective tissue, and these remain open until the necrosed portions of bone come away or are removed. These cases of syphilitic disease of the bones, with long-continued suppuration, often present evidences of amyloid disease in internal organs, especially in the kidneys.

The gummatous osteo-myelitis above described has been most frequently observed in the spongy tissue of the short bones, and in the diploë of the bones of the skull; but there is reason to believe that gummatous deposits also frequently occur in the cancellated tissue of long bones. Ricord has given drawings of gummata in the medulla of the radius and tibiæ, and Volkmann mentions one case in which a gumma in the middle of the diaphysis of the radius was the cause of spontaneous fracture. There are a few other cases on record of spontaneous fracture of long bones due to gummatous deposit. Lancereaux states that gummatous lesions of the medullary cavity of bones are more frequent than would appear from the small number of cases known, and that the rarity of observations is evidently due to the inattention with which the anatomical examination of the osseous system is generally carried out. A similar opinion has lately been expressed by Dr Chiari of Prague, founded upon twenty-seven post-mortem examinations of severe cases of syphilis. In nine of the cases he found gummata in the long bones, the femur and tibia being most often affected, and next to these the humerus and radius. Such growths differ from tuberculous formations in the fact that the latter are more prone to extensive caseation, and under the microscope are found to contain miliary tubercles. In the above-mentioned cases, the gummata presented some differences of structure; some were soft and gelatinous, others fibrous, others again showed signs of caseation in the centre. Their size varied from that of a pea to that of a nut. In one case the tibiæ contained twenty gummata. The external surface of the affected bone is sometimes the seat of hyperostosis, but in other cases there is

no appearance of change. As a general rule these gummata do not give rise to any subjective symptoms; some amount of pain may perhaps be complained of at the affected spot. With regard to their course, they may remain stationary for long periods and absorption may take place, or they may give rise to sclerosis of the bone, to necrosis, or to spontaneous fracture.

The bones which are most prone to become affected during the course of syphilis are those of the cranium, the clavicles, the sternum, and the tibiæ. These bones are for the most part covered only by the integument, and they are particularly exposed to injury, cold, and other irritating influences. The bones of the hands and feet are very rarely affected. Periosteal affections of the scalp are particularly common and often result in ossification or ulceration, while the bones are frequently the seat of caries and necrosis. Bony deposits due to periostitis are sometimes seen on the lower jaw, and more frequently on the clavicles, sternum, and tibiæ.

The symptoms of syphilitic affections of the bones vary according to the position, extent, and nature of the lesions. Of the subjective symptoms pain is the most common, but is by no means invariably present. It is more marked in those cases in which the periosteum is affected, and where the long bones of the extremities and the cranial bones are the seats of the lesion. The pains are often very severe, and are described by the patients as almost unbearable. They are almost always, like the pains felt in the initial stages of syphilis, aggravated at night. When the bones of the head are affected, sleeplessness and giddiness are often experienced, and derangement of vision is sometimes noticed.

The objective symptoms also vary according to the nature of the lesion. Periostitis gives rise to swelling at the affected part which is painful on pressure. The skin is tense and œdematous, and sometimes red and hot. Resolution and disappearance of all the symptoms may follow, but the effusion often becomes ossified, and osteo-

phytes, exostoses, or nodes result. Gummata of the periosteum form rounded elastic swellings, not very painful on pressure. Gummata in the long bones, as above described, appear but seldom to give rise to any symptoms. If necrosis or caries occur, the ordinary symptoms of those affections will be manifested. The cicatrices which remain after ulceration in which the bones have been implicated, present certain peculiarities. The centre is remarkably depressed, while the circumference is elevated and thickened by irregularly-shaped deposits of bone. When the bone is completely destroyed, as occurs in the cranial bones, the vomer and the hard palate, no regeneration of bony tissue takes place. When a portion of a cranial bone becomes necrosed and detached, the dura mater, the bone, and the integuments become united together at the margin of the opening, which is eventually covered by a tough whitish layer. No new bone is formed in the cicatrix, but the surrounding portions become thickened by bony deposit.

In addition to the symptoms directly dependent upon the changes which occur in the bones and periosteum, syphilitic affections of these parts often give rise to secondary disturbances of a severe character. Nerves and vessels are sometimes compressed by bony growths situated in their neighbourhood, loss of function in the one case, and œdema in the other, being thus produced. Pain in the course of a nerve (neuralgia) is often due to the pressure of syphilitic exostoses. Paralysis of muscles supplied by the facial nerve has been known to be caused by an exostosis of the temporal bone near the stylo-mastoid foramen. A similar lesion on the olivary process of the sphenoid bone, by compressing the commissure of the optic nerves, has given rise to total blindness, while deafness has resulted from bony growths in the meatus auditorius. Exophthalmus and paralysis of the muscles of the eyeball may be caused by an exostosis in the orbital cavity. Exostoses on the internal surface of the cranial bones may give rise to various cerebral symptoms,

e.g. epilepsy, convulsions, &c. Affections of the cranial bones leading to necrosis may set up meningitis. Necrosis of the bones of the palate not unfrequently causes a large opening to remain between the mouth and the nose, so that the two cavities freely communicate. Amyloid degeneration of many internal organs, as a result of those syphilitic affections of the bones which are attended with suppuration, has been already referred to.

With regard to the diagnosis of syphilitic affections of the bones, there is, as a general rule, not much difficulty in distinguishing them, provided that the antecedents of the patients be taken into account. Scrofula and syphilis are the most frequent causes of chronic disease of the bones, and a combination of the two conditions gives rise to the worst form of these lesions. Scrofula, however, especially affects the epiphyses of the long bones, the bodies of the vertebræ and the bones of the hands and feet, and the patients are generally young, and present other signs of scrofula. Syphilis, on the other hand, is more prone to affect the bones of the skull, the shin-bones, the clavicles and the sternum. Other signs of syphilis generally, but by no means always, coexist. Syphilitic bony lesions are sometimes developed at a very late period, and at a time when all other manifestations of the disease have long ceased to exist. The local process can rarely be traced to the action of any external cause, whereas in scrofula a slight injury frequently sets up a chronic affection of the bones. The hereditary form of syphilis is characterised by special affections of certain bones. These will be described in a subsequent chapter.

It is needless to discuss at length the assertions, once so frequently made, to the effect that the bony lesions attributed to syphilis, are in reality due either to mercury, or to a combination of mercury and syphilis. It is now almost universally recognised that the severest forms of bone-affections, viz. gummata, exostoses, caries and necrosis, may and do occur as symptoms of syphilis in the treatment of which no mercury has been administered.

On the other hand, it is well known that the bony lesions which mercury indubitably causes, when its use is persisted in for a long time, are confined to certain parts of the skeleton, *i.e.* the upper and lower jaw-bones, and are always preceded by a peculiar inflammatory condition of the mucous membrane covering those bones. The mischief begins in this membrane, ulceration and sloughing are set up and periostitis follows, with caries or necrosis as a possible result. No other bones of the skeleton are similarly affected; the process is purely a local one, and secondary to the inflammation set up by the mercury in the mucous membrane of the mouth.

Treatment.—The details of the constitutional treatment of syphilis will be found in the chapter devoted to this subject. With regard, however, to these affections of the bones, it may be here mentioned that iodide of potassium is the remedy to be employed, and it is one that very rarely disappoints our expectations, if given in proper doses and for a sufficient length of time. Large quantities, such as 60 to 100 or more grains in the twenty-four hours, must be administered in divided doses, and seltzer water or some effervescing combination forms a good vehicle. A few grains of carbonate of ammonia may be added to each dose. Severe pain will require opium. The nodes and other swellings should not be interfered with, unless suppuration has really occurred, in which case incisions may be necessary. Caries and necrosis must be dealt with according to the ordinary rules of surgery.

Syphilitic Diseases of the Joints

Various affections of the joints are liable to occur as results of syphilitic infection, but they are far less common than the majority of the other special manifestations. The period of the secondary eruption is sometimes attended with articular pain and swelling, of an acute character and resembling rheumatism. The knee and the

carpo-metacarpal joint of the thumb are the articulations most commonly affected. In the later periods of the disease, the knee and ankle-joints are most prone to be attacked, and the symptoms are of a more chronic and less severe character. They consist in more or less pain, generally worse at night, and swelling of the articulation in consequence of inflammatory effusion into the synovial capsule or infiltration of the fibrous structures outside the joint. The swelling is not very tense, and its quantity is subject to intermittent variations; on each side of the ligamentum patellæ the swelling is more firm and elastic, and sometimes decidedly indurated masses can be felt at other parts. There is often more or less fever, of a decidedly remittent type; movement of the limb is difficult, but the patient is seldom confined to bed. The swelling is out of proportion to the pain. As a general rule, only one joint is affected at a time, and the symptoms subside under appropriate treatment. Very few opportunities have occurred for examining the joint *post mortem*. In one case, reported by Lancereaux, of a woman who died from bronchitis, complicated by intense syphilitic cachexia, many internal organs contained gummatous growths, while both knee-joints were enlarged and each contained several ounces of a yellowish turbid serum. The synovial membranes, thickened and at the same time injected, were studded with several small pseudo-membranous deposits. The articular surface of the left external condyle was eroded and ulcerated at one point, and the articular cartilages of both patellæ were in the same condition. On the right side, a part of the ligamentum patellæ, the fatty cushion behind the synovial bursa, and all the fibrous tissues attached around the tibia were changed into a uniform greyish-yellow elastic mass, about an inch and a half thick at the median line. This mass resembled the gummatous formations found in the liver. The left joint was similarly affected. There could be no doubt as to the nature of the growth in the joints. It resembled in consistence, colour and histological structure, the products of syphilis

met with in the viscera. Lancereaux points out that the lesions in this case were clearly distinguishable from those of scrofulous disease which has for its starting-point the synovial membrane, and is characterised by the presence of soft fungous and vascular masses; they differ also from those found in rheumatic joint-affections in which there are never any deposits resembling the gummatous formations. The symptoms which the lesions produce are characterised by their slight intensity and the slowness of their development. Relapses are frequent, and the symptoms are generally aggravated by exposure to cold and damp.

In a few very rare instances, the articular surfaces of the bones are the structures primarily affected. The parts are then swollen; there is severe pain, especially at night, and the joint is very tender on pressure. The knee-joint is liable to be affected, and some amount of periostitis of the upper part of the tibia generally coexists. There is no tendency to suppuration or to anchylosis or other severe change in the joints. The symptoms yield to anti-syphilitic treatment, but remedies of a different character, administered perhaps under the idea that the symptoms are due to rheumatism or scrofula, produce no effect.

The *diagnosis* must be aided by the history of the case; the symptoms resemble those of scrofula and rheumatism. In joint-disease due to the former affection, the swelling is considerable and somewhat rapidly increases; movement soon becomes difficult and anchylosis is a common result. In rheumatic arthritis several joints are usually affected at the same time.

Syphilis has a tendency to affect certain small joints of the hands and feet. The complaint is called *dactylitis syphilitica*. The bones, as well as the other structures of the joints, are implicated in this lesion. The affected joint is much swollen, so that the fingers cannot be brought together as before. The finger is also much enlarged and bluish in colour from capillary congestion. The swelling is tense and elastic and does not

pit on pressure; it is especially marked on the dorsal surface. Movement is more or less interfered with, and sometimes crepitation can be heard. The first and second joints of the fingers are those which are most often affected, but the metacarpo-phalangeal joints are sometimes thus swollen. The pain is usually slight, and the part is not very tender to the touch.

Two varieties of this affection exist: in the first, which occurs in the later part of the secondary stage, the periosteum and the fibrous tissues of the joints are the parts mostly implicated; in the second form, the symptoms are due to syphilitic osteo-myelitis, and occur at lengthened periods after infection. The lesion is of a more serious character, and may terminate in destruction of cartilage and more or less immobility of the joint. The effusion sometimes becomes purulent, and sometimes the integument gives way and a fistulous opening results. Dactylitis syphilitica is an occasional symptom of the inherited form of the disease (see chapter on Hereditary Syphilis).

The *diagnosis* of these cases must be made by the aid of any coexisting symptoms and the past history of the case.

The *treatment* of these joint-affections consists in the administration of iodide of potassium in full doses. Should the symptoms not yield, a course of mercury may be prescribed.

Syphilitic Affections of the Bursæ

These occur both in the secondary and in the tertiary stages of syphilis. The secondary affections consist of inflammation and thickening without effusion. In the tertiary stages, the bursæ are sometimes the seat of gummatous formations. Those connected with the knee-joint, and particularly the patellar bursa, are most often affected. In the majority of the reported cases, an injury

was alleged to be the exciting cause of the swelling, but there was never any pain until the integument became implicated. The skin may become dark red in colour and occasionally ulceration sets in. Fluctuation is rarely present, the process consisting in thickening and infiltration. The swelling slowly develops, and always subsides under anti-syphilitic treatment. There is often a pre-existing gouty or rheumatic taint. The recognition of syphilitic bursitis must depend upon a consideration of various points, which are thus given by Fournier. 1. The history of a primary lesion. 2. Observation of the comparative frequency with which such diseases occur in syphilitic subjects, especially in women. 3. The association of bursal affections with other secondary manifestations, or with gummata in the tertiary period. 4. The presence elsewhere of decidedly specific lesions. 5. Symmetry of the lesions, though this is by no means invariable. 6. The development of the disease simultaneously with other lesions, and subject to the general evolution of the diathesis. 7. The absence of any other assignable cause. 8. The failure of ordinary measures, but speedy recovery under specific treatment.

Syphilitic Affections of Cartilage

It is doubtful whether the articular cartilages are independently affected in the course of syphilis; but they sometimes become softened and eroded as a consequence of extension of disease from the bones or the synovial membrane. With regard to other cartilages, the same remark holds good, but some of them, and especially the cartilages of the nose and larynx, often become seriously changed in consequence of the extension of disease from the integument or mucous membrane covering them. Lancereaux states that only those cartilages which have a fibrous covering or perichondrium, are liable to be attacked. In the mildest form, as in slight affections of

the mucous membrane, the cartilage is apt to become eroded or even perforated; but the mischief does not extend, and the adjoining portions remain normal. Sometimes only the free border of the cartilage, as in the larynx, is superficially ulcerated, and presents a honeycombed or irregularly serrated edge. In the thyroid cartilage, several changes, of a more serious character, are not unfrequently seen. Perichondritis sometimes sets in, and is followed by a process of partial ossification. The part loses its elasticity, and is tender on pressure. Some amount of crepitation may sometimes be heard. The function of the part is seriously disturbed in consequence of the loss of elasticity and of the changes in the adjacent structures, such as the thickening of the mucous membrane and ligaments, and especially of the vocal cords. Caries and necrosis are not frequent results of syphilis of the larynx, but these changes have been observed *post mortem* in a few cases. In one case recorded by Lancereaux, the pneumonia which caused the patient's death, was the result of disease in the larynx, the cartilages of which were almost completely destroyed, denuded and ossified fragments being all that remained. Caries of the cricoid cartilage is sometimes seen as the result of ulceration of the mucous membrane, and the mischief sometimes spreads to the arytænoid cartilages, which become ossified and necrosed. They are apt to become detached, in which case one or both may be coughed up; or, acting as a foreign body, may give rise to the formation of an abscess in the neck. The costal cartilages appear to be liable to similar changes, but they are very rarely affected. The affections of the cartilages of the nose have been already described (see page 145).

Syphilitic Affections of the Muscles and Tendons

Syphilis affects the muscles in two ways; it gives rise to a diffused infiltration (interstitial myositis) and it also

causes circumscribed lesions or true gummata. The latter affection is the more common.

Interstitial myositis is caused by the deposit of a peculiar plastic matter between the fibres of the muscle, or by chronic circumscribed inflammation of the fibrous sheath. The muscle first becomes thicker and shorter; but absorption soon takes place, with atrophy and fibrous degeneration as a result. Virchow describes the changes as being similar to those produced by simple rheumatic or traumatic inflammation; the interstitial tissue of the bundles of muscular fibres is the seat of development of connective tissue, which becomes indurated and leads to atrophy and destruction of the muscular fibrils. It is probable that both the muscular sheaths and the prolongations therefrom between the fibres are thus infiltrated.

When gummata are developed, the infiltration takes place in circumscribed portions of the connective tissue between the muscles or the fasciculi. These growths resemble similar tumours of the subcutaneous connective tissue. They are reddish-grey at first, and afterwards become yellowish. They may attain the size of a nut or a walnut, and they vary in consistence, being sometimes soft and almost diffluent, and sometimes firm and elastic.

Both these affections are accompanied by slight pain, especially felt on moving the muscle. Diffused myositis gives rise to contraction, and the pain is felt chiefly at the points to which the muscle is attached. The biceps of the arm is the muscle most frequently affected. The first symptom, which may appear about a year after infection, is stiffness of the elbow; the patient finds it difficult to extend the arm, and if force is applied the biceps may be felt to resist the extension. In marked cases the forearm becomes flexed at a right angle. No circumscribed tumours can be felt; the muscle generally is hard and tense.

When gummatous formations take place in a muscle, retraction is not a necessary symptom. If the tumours are superficial, they may be felt as resistant, firm nodules,

more or less globular in form, easily isolated when the muscle is at rest. The long axis of the growth usually coincides with that of the muscle. They give rise to little or no pain, but more or less interfere with the action of the muscle. Such growths become developed slowly, and may disappear spontaneously, or their disintegration may result in suppuration and discharge externally; when softening takes place they may be mistaken for an abscess. Sometimes they become fibrous and undergo calcareous degeneration. Absorption is, however, the most frequent termination. The middle portions of muscles are the ordinary seats of these growths. Less frequently they are found near the attachments. The biceps of the arm is most often affected, and next to it come the biceps femoris, the pectoralis major, the sterno-mastoid, the masseter, and the rectus muscle of the abdomen. It often happens that several muscles are invaded at the same time. Gummata sometimes occur in the heart (see p. 164) and give rise to serious symptoms.

The diagnosis of syphilitic myositis must be made by the aid of the concomitant symptoms, such as exostoses, ulcers of the pharynx, gummatous growths in the skin, &c., which are usually present. In the diffused form the symptoms resemble those of rheumatism. If the tumours can be felt, the diagnosis is for the most part easy. If suppuration takes place, the appearances are those of an ordinary abscess. The process, however, is less acute, and the discharge is thin, muco-purulent, and sanious. The opening is small, and the cavity shows no tendency to rapid closure, but continues to discharge a thin glairy fluid. Reparation and cicatrisation are slow and tedious, and the opening does not close until the whole of the new formation has become disintegrated.

Syphilitic Affections of the Tendons and Tendinous Sheaths

The tendons, like the muscles, are occasionally the seat of syphilitic changes. The lesions consist in simple and partial thickening, owing to plastic infiltration, and the development of small gummatous tumours or growths of a circumscribed character. The tendons most frequently affected are the tendo Achillis, the tendons of the biceps and triceps, the patellar tendon, the tendinous attachment of the sterno-cleido-mastoid muscle, and the flexor and extensor tendons of the fingers. Serous effusions also occasionally take place into the sheaths of certain tendons, especially those of the extensors of the fingers. Fournier has described several instances of this latter condition. The exudation is considerable, the fluctuation very distinct ; sometimes the integument is unaltered, but sometimes it is reddened and painful. In other cases fluctuation is scarcely perceptible, the swelling is of a doughy character, and sometimes there are scarcely any external changes, but the tendon is painful on pressure and the movement of the finger is interfered with. True gummatous formations may also develop in the sheaths of tendons. Thus in a case recorded by Mr Nunn, a palish yellow tumour, of the size of half an orange, formed above the tendons on the dorsum of the foot, in a man forty-five years of age, who had suffered from syphilis for twenty years. Ulceration had taken place, and the contents of the tumour were evacuated. A similar formation, with like results, had taken place some time before over the tendons at the inner side of the knee. Another case has been reported in which, fifteen years after infection, a gummatous growth became developed in the tendinous sheath of the peroneus anticus of the right side.

In the case of the tendons themselves, the gummatous formations may be developed either on the surface or in their substance. They are usually superficial, and project

more or less abruptly above the surface of the tendons. When more deeply seated they cause the tendinous fibres to separate, the growths themselves becoming elongated and fusiform. Movements are more or less interfered with, and the tumours are sometimes painful. In a few cases the integument becomes red, inflamed, and ulcerated, and the gummatous mass is gradually discharged. Troublesome and chronic sores result, healing being impeded by the movements of the muscles.

The *diagnosis* must be made by the aid of the history of the case and of any coexisting symptoms. The *treatment* consists in the administration of iodide of potassium and the local application of the liniment of iodine.

CHAPTER XVII

SECONDARY AND TERTIARY SYPHILITIC AFFECTIONS OF THE ORGANS OF GENERATION

In the male subject, during the eruptive stage, the integument of the glans penis is occasionally marked by roseolous patches, which more or less speedily disappear. It sometimes happens, however, that a diffuse erysipelatous redness appears on the inner layer of the prepuce, and the fossa behind the glans, and sets up a somewhat acute catarrhal condition of these parts. The prepuce becomes inflamed, thickened, and of a deep red colour, and more or less secretion is poured forth by the glands. Without proper examination, the case may easily be mistaken for one of ordinary balano-posthitis. In the syphilitic affection, however, other indications of the disease, such as an induration on the penis or some eruption on the skin or in the throat, will invariably be present. Moreover, the symptoms are of a milder character than those of balanitis, which generally produces great swelling of the prepuce and of the integument of the penis, and sometimes acute inflammation of the lymphatic vessels and profuse secretion between the prepuce and the glans. Even in syphilitic cases, if the catarrhal secretion be allowed to accumulate, there is likely to be considerable excoriation of the glans and prepuce. Under such circumstances, the sores might be erroneously regarded as of a primary character, and the subsequent symptoms might then be attributed to a "soft" sore. Such an error can be easily avoided by a proper examination of the patient.

Erythema of the vulva sometimes occurs in women

recently infected with syphilis. The mucous membrane is reddened and covered with secretion, the labia are more or less œdematous and the redness extends for some distance into the vagina. Erosions, similar to those on the prepuce, sometimes occur, and may give rise to errors of diagnosis. The secretion readily becomes very abundant unless great cleanliness be observed, and the irritation is apt to spread to the vulvo-vaginal and sebaceous glands. A male patient, having connection with a woman thus affected, is sure to suffer from urethritis, but he may escape syphilis. If, however, the muco-purulent catarrh of the vagina be associated with mucous patches of the vulva or of the os uteri, syphilis will almost certainly be communicated.

Mucous Papules are very common on the genital organs of both sexes, and they are found in various stages and of different sizes. In the male subject they are most frequently met with in the fossa behind the glans, on the margin of the prepuce and at the orifice of the urethra; in women they are found on the vulva, especially on the inner surface of the labia majora and on the labia minora, in the upper part of the vagina and on the vaginal portion of the uterus. The region of the anus, in both sexes, is a common seat of mucous patches. They vary much in appearance; one variety often occurs with roseola and miliary cutaneous papules. Others are much larger and rounded in form. Those situated on the cutaneous surface consist of thickening and proliferation of the superficial layers of the skin, and their surface is red, smooth, and polished, and either dry or slightly moist; they are often more or less eroded. On the mucous membrane of the vulva the papules are softer and of a lighter colour, owing to persistent contact with the secretions of the part, and they are often extensively eroded or ulcerated and inflamed, and discharging profusely. They are sometimes covered with a diphtheritic false membrane, and they often send out prolongations or vegetations. It also not unfrequently happens that an

ulcerated mucous patch has an inflamed and indurated base which closely resembles that of a chancre. The diagnosis, in such a case, is made clear by the discovery of other mucous patches and secondary symptoms elsewhere. It must be remembered, however, that the chancre is occasionally converted into a mucous papule—a process which Ricord designated "transformatio in situ." As a matter of course, the discharges from these lesions are of a highly contagious character, and they may give rise, not only to chancres but to moist papules or condylomata, which are followed by constitutional symptoms. These growths on the mucous surface of the vulva often cause the labia minora to become œdematous. When they occur in an aggravated form and are neglected, they increase in size and become confluent, and in this way form large, soft, greyish-red, irregular, fungoid masses, covering the external genitals and extending from the pubes to the anus and laterally to the groins and upper parts of the thighs. They are covered with a profuse muco-purulent or sanious secretion, of a highly irritating character, and with a peculiarly offensive odour. Such growths are seen in the lower classes of prostitutes who pay no attention to cleanliness. They subside rapidly under proper treatment and ablution. The most frequent complications of these growths are abscesses of the vulvo-vaginal glands, vaginitis, and inflammation of the neck of the uterus.

The treatment of these growths consists, first and foremost, in cleanliness and rest. After thorough washing and drying, they should be dusted over with a mixture of calomel and oxide of zinc, equal proportions, and lint should then be applied so as to keep the parts from contact. This dressing should be frequently renewed. Mercurial treatment must of course be adopted, and the local treatment must be persevered with until the growths have disappeared. Relapses are very apt to occur. If the growths prove very obstinate, superficial cauterisation from time to time with nitrate of silver will expedite their removal.

Gummata sometimes occur on the mucous membrane

of the genital organs in both sexes. In the male subject, they are most common on the inner surface of the prepuce, and they are sometimes found in the urethra close to the meatus. In women, they occur in the labia majora and minora and near the inferior commissure of the vagina. They may be single, or two or three may be found close together. In the latter case they are apt to become confluent and their disintegration causes superficial ulcers, varying in size. Gummatous growths but rarely occur in the vagina. They do, however, sometimes give rise to more or less deep ulceration and subsequent contraction of this canal. Ulceration of the cervix uteri is sometimes due to the disintegration of gummatous growths. Such lesions can scarcely be distinguished from others due to non-specific causes. With regard to the female urethra Virchow states that ulcerations and cicatrices sometimes follow gummatous deposits, and have exactly the same character as those of the larynx. He has described one case in which the ulceration extended to the bladder and was followed by cicatrisation. Gummata occurring in the tissue of the male urethra, diminish the calibre of the canal and may also become disintegrated and give rise to fistulous openings at the posterior surface of the corpus spongiosum. Zeissl states that they are most frequently situated close to the urethral orifice. The same form of growth occasionally invades the corpora cavernosa. A small induration is first noticed by the patient, and this gradually increases in size, but without causing pain. As the induration extends, the affected portion loses more or less of its erectile capacity, and if the induration be very considerable the corpus cavernosum of the sound half only is capable of distension, and the penis, during an erection, describes a curved line with a lateral concavity. If the induration be on the dorsum of the penis, the organ becomes curved upwards and backwards towards the pubes.

Ulcers due to the disintegration of gummatous growths differ from primary ulcers in the slowness of their deve-

lopment and their less rapid cicatrisation, which does not occur until all the new formation has been removed. They sometimes assume a crescentic shape, and they are always associated with other manifestations of syphilis. A patient suffering from such an ulcer is apt to believe that he has recently contracted syphilis, whereas these gummata appear five or six years after the primary lesion. It is remarkable that a gummatous growth sometimes occupies the site of an original chancre. If the base of such an ulcer be hard it may be difficult to distinguish it from an indurated sore; the diagnosis must be made from the history of the case and with the aid of the coexisting symptoms, such as diseases of the bones, &c. If, on the other hand, the edges and base of the ulcer be destitute of hardness, it may be mistaken for a soft sore. The secretion from the latter is, however, auto-inoculable. It is important to distinguish between the primary and the tertiary ulcerations, inasmuch as the latter require for their treatment large doses of iodide of potassium, while the former (if of a truly syphilitic nature) require mercurials.

Syphilitic Affections of the Testicle

These occur in two forms. In the first, the morbid process affects the tunica albuginea and its prolongations into the substance of the gland, and induces the formation of new connective tissue. The second is characterised by the development of gummatous growths. These processes may coexist; they have, indeed, been regarded as identical, the first as being due to *diffused* gummatous formation and the second to *nodular* deposits. Virchow has described a form of inflammation of the tunica vaginalis, due to syphilis, and causing adhesions between the visceral and parietal portions. When the gland is involved, the new connective tissue presses upon the tubules and causes their absorption and decay. Separate lobes are especially affected, and the gland becomes nodu-

lated and hard, and loses its normal form. The bands of connective tissue are visible on section, and there are often small caseous masses, the remains of gummatous nodules. The processes are similar to those which are observed in the liver.

Syphilitic orchitis is one of the least common of the secondary affections, and it rarely appears until the second or third year. Pustular eruptions and gummatous formations in other parts usually coexist. The symptoms consist in a gradual enlargement of the gland. It rarely happens that any pain is complained of, and the swelling is not particularly sensitive on pressure. The gland is felt to be hard and nodulated, the nodules being particularly firm and resistant. Later on the swelling increases, and the surface becomes more uniform; the tumour is extremely hard and may be twice or thrice as large as the normal gland. The epididymis and the vas deferens are generally unaffected, but sometimes these parts are enlarged and indurated. The disease may involve one or both testicles at the same time, or may affect first one and afterwards the other. Hydrocele sometimes coexists. The course of the affection, left to itself, is generally tedious, and the swelling is apt to reappear from time to time after subsidence. As a general rule, the deposit becomes absorbed, and the gland regains its normal size and consistence. Sometimes, however, the contraction of the newly-formed connective tissue leads to partial or complete atrophy of the testicle. Suppuration very rarely takes place. If both glands are involved and atrophy occurs, their function will be seriously affected, and complete impotence may result. Even where the atrophy is incomplete, the semen secreted by a syphilitic testicle is generally deficient in spermatozoa.

Diagnosis.—Gonorrhœal epididymitis, tubercular deposit, and cancer, are the conditions which most resemble syphilitic orchitis. Epididymitis is accompanied by feverishness and severe pain which extends to the groin and back; the scrotum is red, hot, and tense, and all move-

ments are painful. The gonorrhœa continues, or the discharge may have ceased. There is generally some amount of effusion in the tunica vaginalis. The inflammation rarely extends to the body of the gland, but the spermatic cord is often implicated.

Tubercular disease of the testicle begins in the epididymis, whence it spreads to the gland. It occurs soon after puberty in young subjects of a scrofulous habit. The tubercular deposit takes place in the tubules and ends in caseation or suppuration. Its progress is slow; the testicle becomes hard, knotty, and irregular. The nodules become adherent to the tunica vaginalis and integument of the scrotum, and abscesses form, followed by fistulous openings. Both testicles may be affected, and the tumours are painful to the touch. The symptoms are benefited by cod-liver oil, iodide of iron, &c.

Cancer of the testicle is usually of the encephaloid variety. It begins in the body of the organ, by the development of small nodules in the tubules. Its growth is rapid, and the testicle soon assumes an irregular form. The gland is at first hard and heavy, but it soon becomes elastic and tense, and severe pain is felt. The skin of the scrotum is rapidly implicated and gives way, and fungoid masses protrude from the openings. The inguinal glands are enlarged and indurated. The tumour grows very rapidly, and often attains an immense size.

The *treatment* of syphilitic orchitis consists in the administration of mercury and of iodide of potassium in large doses. The patient should be kept at rest and the part should be supported by a suspensory bandage or strapping. If resolution be delayed, the ointment of the iodide of potassium or the tincture of iodine may be applied to the scrotum, the doses of the iodide should be increased and the use of the remedy continued.

The epididymis is sometimes the seat of gummatous nodules which give rise to induration. The small tumour is usually situated in the globus major; it is hard, indolent, and painless; its size is that of a pea or bean. It

occurs at a comparatively early period, from six to twelve months after infection. It may occur on one or on both sides. The gummatous deposit is supposed to be in the connective tissue of the ducts and not in the ducts themselves, inasmuch as the secretion and function of the part is not interfered with. The affection rarely spreads beyond the globus major, and there is no simultaneous enlargement of the testicle. The swelling, if neglected, remains for a lengthened period without undergoing any change, but it rapidly disappears under mercurial treatment.

Affections of the Ovaries and Uterus

But little is known as to the manner in which syphilis affects these organs. Virchow believes that inflammation of the ovary may be directly due to syphilitic infection; but he is unable to say whether it results in anything more than fibroid induration. A few cases, however, have been recorded in which the ovaries were the seat of gummatous deposits. In one of these, reported by Lebert, the organs in question contained several whitish nodules, some isolated and others confluent; while abundant indications of syphilis, in the form of gummata, ulcers and cicatrices, existed in other parts.

In other cases, mentioned by various authors, the changes presumed to be due to syphilis were of a very doubtful character. It would seem, however, that the ovaries, from their fibrous structure, would be likely to be invaded by syphilitic lesions. Such lesions as are known are analogous to those of the testicles, and they are probably due to the same anatomical changes, viz. the diffused and the circumscribed deposits. Lancereaux has observed only the atrophic state of the diffused form. He states that the symptoms of these affections are but of an indefinite character. They consist of a slight, dull pain; more or less swelling, and, if both organs are affected, loss of sexual desire and sterility. The diagnosis must be made by the

aid of coexisting symptoms. Iodide of potassium is the remedy to be used, if the ovaries of a syphilitic subject become swollen and painful.

Few if any changes in the uterus can be positively referred to syphilis, though it would appear probable that interstitial inflammation and gummatous tumours occur in this organ. Dr Aimé Martin has, however, described a syphilitic hypertrophy, accompanied by ulceration, of the neck of the uterus; and he states that this affection occurs in nearly half the total number of cases of syphilitic women. The condition is apparently not due to gummatous infiltration. The ulceration is only superficial; the secretion is scanty and muco-purulent and of a highly contagious nature. The symptoms and appearances subside during a course of mercury.

The mammary glands are the occasional seat of gummatous growths; in some cases diffused, in others of a circumscribed character. The affection is said to be almost always symmetrical, it is less rapid in its growth than cancer and far less prone to become ulcerated. Moreover, the swelling subsides under the influence of iodide of potassium.

CHAPTER XVIII

SYPHILITIC AFFECTIONS OF THE EYE

With the exception of the crystalline lens, all the parts of which the eye is composed are liable to be affected in syphilis; but it is only in comparatively modern times, that the connection between the constitutional disorder and the local manifestations in the organ of vision has been properly recognised. It is true that the term "syphilitic ophthalmia" was in use at the beginning of the present century, but it was applied only to affections of the iris and of the anterior parts of the eye. Other lesions were, however, attributed to syphilis, and were treated more or less successfully with mercury, but they were all grouped under the general and vague term *amaurosis*. It was not until the discovery of the ophthalmoscope that the existence and nature of the more deeply seated lesions, namely, those of the choroid, retina, and optic nerve, were ascertained and demonstrated.

Syphilitic Affections of the Eye may be divided into two principal classes. The first class includes those lesions and disorders which are the direct consequences of the infection; the second, those affections of the eye which are due to syphilitic diseases of the brain or other parts more or less intimately connected with the organs of vision.

The first class will therefore include:

1. Syphilitic affections of the eyelids.
2. Syphilitic affections of the conjunctivæ.
3. Syphilitic affections of the cornea.
4. Iritis.

5. Choroiditis.
6. Retinitis.

The second class includes :

7. Optic neuritis, the result of lesions of the brain.
8. Atrophy of the optic nerves, consequent upon cerebral lesion or disease of the bones.
9. Paralysis of the muscles of the eye and of accommodation.
10. Syphilitic lesions of the lacrymal apparatus (see p. 146).

1. **Syphilitic Affections of the Eyelids.**—The eyelids are occasionally the seat of primary and secondary syphilitic lesions. Gummatous growths are also sometimes found on these parts. Soft chancres on the eyelids are extremely rare, hard sores are somewhat more common. The infection is usually conveyed from the lips of a person suffering from a syphilitic lesion of the mouth and throat. Hard chancres have been met with on the lids of newborn children, and are undoubtedly the result of direct inoculation during parturition. The ulcer may occupy any part of either lid ; it causes considerable swelling of the part, and is usually associated with induration of the glands in front of the ear and under the chin.

Gummata sometimes occur in the eyelids. They form small roundish tumours, somewhat painful to the touch and causing more or less inflammation of the eyelid. Such a growth may be mistaken for a hordeolum or a chalazion. Their tendency is towards disintegration and ulceration which sometimes extends to the conjunctiva and causes considerable destruction of the tissues of the eyelids. In slighter cases the ulcers heal and leave a small, white, depressed cicatrix, generally near the margin of the lid, which sometimes appears notched. More or less extensive destruction of the eyelashes is likely to result. Gummata have been seen in the lids as early as the sixth month after infection, and also at periods when all other traces of the disease had disappeared. The ulceration is gene-

rally accompanied by swelling and induration of the glands in the neck, and especially under the chin.

The tarsal cartilages sometimes become inflamed as a result of syphilis. The symptoms are, thickening and infiltration of the cartilage, and great swelling of the eyelid. In two recorded cases of this affection, the eyelid attained the size of a small pigeon's egg. Glandular induration and other symptoms of syphilis were present at the same time. The affection is a chronic one, and yields but slowly to specific remedies.

2. **Syphilitic Affections of the Conjunctiva.**—These are less common than those of the lids, and are most frequently due to the extension of inflammation or ulceration from the latter parts. The conjunctival surface is, however, sometimes independently affected, and is the occasional seat of hard and soft chancres, and of gummatous growths.

Syphilitic ulcers of the conjunctiva have been very seldom noticed, but a few well-authenticated cases have been placed on record. The ulcer causes considerable swelling and hardness of the affected lid, and is attended with induration of the præauricular glands. In the absence of such induration, the diagnosis may present considerable difficulty. In a case recorded by Mauthner, a hard swelling, as large as a bean, was found immediately under the conjunctiva of the lower lid. The patient was a girl, aged nineteen, apparently in perfect health. The surface of the tumour presented an irregularly shaped ulcer, covered with a very scanty secretion. There was no swelling of the neighbouring glands, but the case was set down as one of indurated chancre of the conjunctiva. The tumour was excised by another surgeon and found, on examination, to consist of "granulation-tissue." Recurrence took place and removal was again practised, when the eyeball was injured. So much mischief was set up that enucleation of the eyeball became necessary. There was no subsequent manifestation of any constitutional symptoms and the nature of the case remained very obscure.

Cases of gummatous growths of the conjunctiva are

somewhat more frequent, and these formations are generally situated on the ocular conjunctiva, near the margin of the cornea. They form small, yellowish, smooth nodules, not much raised above the surface of the conjunctiva, and without any sharply-defined border. They discharge on section a minute quantity of semi-purulent fluid. They have been sometimes found associated with gummata in other parts of the eye, and in various parts of the body. Malignant growths are sometimes found on the conjunctiva, and, like gummata, near the corneal margin. They however present a rough, nodulated surface, are usually sharply defined, and project above the level of the conjunctiva.

3. **Affections of the Sclerotic and Cornea.**—The sclerotic is seldom, if ever, independently affected in constitutional syphilis, though cases of syphiloma of the cornea and sclerotic, and of syphilitic scleritis have been described. It would appear, however, that the affection of the sclerotic is always secondary to gummatous formations in the ciliary body or choroid.

Syphilitic Affections of the Cornea most commonly occur in connection with the hereditary form of the disease. The substance of the cornea is the seat of the inflammation, which may be either diffuse or punctate. Mr Hutchinson believes that the peculiar inflammation of the cornea, known by the name of "strumous corneitis," and occurring for the most part in patients between the ages of three and twenty, is always due to hereditary syphilis. Mr Hutchinson also observes that a peculiar condition of the permanent incisor teeth almost invariably coexists with the corneal inflammation.

The affection usually commences as a diffuse haziness near the centre of the cornea of one eye, though the advent of the disease is occasionally heralded by the appearance of a small salmon-coloured patch at the corneo-scleral margin. There is no ulceration and little, if any, congestion, but the eye is weak and irritable. Cloudy dots are seen to occupy the structure of the cornea; these are at first separate but sooner or later become confluent, the

opacity being especially marked at certain spots. As the disease progresses, a zone of sclerotic inflammation encircles the cornea; there is pain in the eye and orbit and intolerance of light. After some weeks the other eye is usually affected in the same way, and the patient may become almost blind. In the course of time, however, especially if suitable treatment be adopted, the opacity clears up, and the cornea almost or entirely regains its normal transparency; but cloudy patches may remain for indefinite periods. Throughout the course of the complaint there is, as a general rule, but slight evidence of increased vascularity; but in severe cases, the cornea assumes a rosy tint, owing to the development of minute vessels at its periphery. Ulceration very rarely occurs, though the epithelial layer of the cornea is generally implicated and assumes the appearance of ground glass. The other characteristics which are associated with this affection, viz. the peculiar malformation of the teeth, the alterations in the physiognomy and general appearance of the patient will be described in the chapter on hereditary syphilis. Interstitial keratitis is most commonly seen in patients about ten years of age; but it may appear much earlier or not until the patient is grown up.

Some German ophthalmologists deny the existence of any necessary connection between interstitial keratitis and inherited syphilis, and they attribute the affections of the teeth to rickets rather than to a specific taint. Others again fully endorse Mr Hutchinson's views. According to the statistics of the Bonn Eye Hospital, hereditary syphilis could be demonstrated to exist in 62 per cent. of the cases of interstitial keratitis.

Keratitis is occasionally seen in adults, the subjects of acquired syphilis, and it is sometimes associated with iritis and sometimes occurs alone. In the former case the appearances seen consist of opaque patches resembling ground glass, and commencing at the circumference of the cornea. They are not very abruptly defined from the transparent portions, and the epithelial covering is not

implicated. There is no sign of vascular proliferation. This *diffuse* keratitis occurs in the later stages of syphilis, and is associated not only with iritis, but with gummatous ulcers of the skin and other parts. It subsides rapidly under mercurial treatment.

There is another form occurring in the same class of cases and described as *punctate keratitis*. This is characterised by the appearance in the substance of the cornea of circumscribed greyish or yellowish spots, some of them being as large as a pin's head. There is no zone of sclerotic congestion, and the portions of the cornea surrounding the spots are perfectly transparent. The patches are rapidly developed, and may rapidly disappear, either completely or partially, in the latter case leaving behind them small opaque points. The opacities never attain a large size, and never end in suppuration. It may be that the spots in question consist of gummatous deposits. Appearances of this kind have been seen in the eye three months after infection, and associated with choroiditis. In other cases the remaining structures of the eye have appeared normal.

A form of partial or total disintegration of the cornea has been described as occurring in infants, the subjects of hereditary syphilis, and has been termed *malacia corneæ*. The patients are invariably ill-nourished and wasted, and the symptoms have been sometimes observed to set in shortly before death. An ulcer appears without any signs of inflammation, and increases till a large portion of the cornea is involved. If life be prolonged some attempt at reparation may take place, resulting in the formation of a solid opaque deposit, which may again break down. The appearances are usually associated with symptoms of chronic encephalitis.

4. **Syphilitic Iritis.**—Of all the structures of which the eye is composed, the iris is the one that is most frequently affected in syphilis. It would appear from statistics, that syphilis is the cause of more than half the total number of cases of iritis, and that iritis constitutes from one-half

to two-thirds of the eye-affections due to syphilis. It is further stated that iritis occurs in from five to six per cent. of all cases of syphilis.

When present, syphilitic iritis generally accompanies the early cutaneous eruptions, but it may appear at any stage of the disease. It is an occasional symptom of hereditary syphilis. It is probable that external influences, such as exposure to cold and damp, may assist in exciting an attack of iritis in syphilitic subjects. The affection has been known to supervene in a very severe form during mercurial treatment. As a general rule, one eye is first affected, and after a short interval, the other eye is attacked, but sometimes both eyes are affected at the same time. Relapses are somewhat frequent.

Symptoms.—In the large majority of cases these differ in no way from those of iritis due to other causes. It is only when gummatous growths are seen on the membrane that the appearances are characteristic of syphilis. With regard to the other symptoms, they may be thus briefly summarised. The patient complains of pain in the eye and around the orbit; the pain is generally worse at night. Vision is more or less impaired; there is some amount of photophobia and chemosis. The symptoms, as a general rule, are somewhat slow in their development. On examining the eye, the iris is found to be dull and discoloured, its free edge is uneven and irregular, the pupil is contracted, more or less angular and drawn inwards and upwards, and perhaps adherent to the capsule of the lens.

Gummatous nodules are seen upon the surface of the iris in about one-fourth of the cases of syphilitic iritis. Their presence constitutes an almost pathognomonic symptom. They are usually single, but sometimes multiple, and they vary in size from that of a small pin's head to that of a lentil. In exceptional cases they attain a much larger size, and have been known to fill the anterior chamber and to protrude through the sclerotic. They are most frequently situated close to the margin of the pupil and they give rise to posterior synechia, but they are

sometimes found on the ciliary margin of the iris. They are yellowish-red in colour, and vessels are sometimes seen to course over them; in other cases their surface is greyish-yellow, as if covered by a layer of pus. The larger nodules sometimes, though rarely, suppurate; they usually undergo absorption, their position on the iris being subsequently marked by spots of a lighter colour. Very large gummata may lead to atrophy of the eyeball, but such a result is extremely rare. Gummata sometimes occur on the ciliary processes, and involve the sclerotic coat, the choroid, and retina.

In addition to gummatous growths, a gelatinous exudation has been described as occurring in some cases of syphilitic iritis. The exudation is said to resemble in appearance a cysticercus-vesicle, furnished with a greyish blue thin wall; it appears to start from the margin of the pupil, and to be connected with the anterior capsule. The exudation is rapidly poured out and disappears in a few days.

The progress of syphilitic iritis resembles that of other forms of the disease. The symptoms are sometimes of an acute character, hyperæmia and severe supra-orbital pain, with evening exacerbations lasting till midnight, being the most prominent features. A decided attack of this character, in a patient suffering from this affection, often depends on an increase of inflammation and the development of fresh adhesions. In such cases, the pupil previously dilated by atropine is again contracted, and the aqueous humour loses its transparency. After a course of several weeks, during which exacerbations frequently occur, the symptoms gradually subside, the pupil regains its normal size, the pains abate and vision becomes clearer. Recovery, however, is often imperfect, and relapses are not unfrequent.

In other cases the symptoms are less severe from the first, and the complaint pursues a very tedious course. The patients suffer but little, and are only aware that their vision is becoming less and less distinct, and that their

eyes soon become red and sore on exposure to cold winds. On examination, the pupil is found to be much contracted or even closed, and the iris discoloured and prominent. The prognosis in such cases is very unfavorable. It frequently happens that the process appears to terminate and temporary improvement takes place; but relapses occur under the influence of any source of irritation, fresh adhesions are formed and the pupil becomes closed, or exclusion takes place.

The inflammation, in unfavorable cases, is not confined to the iris. The choroid and the ciliary processes are apt to become implicated. *Choroiditis* is characterised by the appearance in the vitreous body of fine dust-like particles, which tend to unite and form flocculi. The retina becomes greyish and cloudy, and variegated by patches of effusion and dark-coloured deposits. Atrophy of the retina often results.

Cyclitis more commonly follows the chronic form of iritis. It is characterised by severe ciliary neuralgia, much aggravated on touching the eye; rapid impairment of vision; diminished tension of the eye-ball; sometimes by hypopyon, retraction of the ciliary portion of the iris, and finally by complete disorganisation and bulging forward of portions of the iris, as a result of accumulation of fluid behind that membrane. Diffuse retinitis is another occasional complication of syphilitic iritis.

In favorable cases, the iritis runs its course in from two to three weeks. All the symptoms then subside; the pupil regains its power of movement, vision is restored; and the iris resumes its normal appearance. Slight adhesions sometimes remain between the pupillary margin and the capsule of the lens, or the uveal surface becomes adherent at one or more points. This latter condition does not much affect the movements of the pupil. In unfavorable cases the results are often very serious as regards the function of the eye. More or less atrophy of the tissue of the iris; extensive posterior synechiæ; complete adhesion of the pupillary margin to the lens,

forming what is called "exclusion" of the pupil; and distension of the eye-ball are occasional consequences of severe syphilitic iritis. Distension of the eyeball causes obstruction to the circulation, the vitreous humour is reduced to a liquid condition; degeneration of the retina and atrophy of all the structures of the eye result in total loss of vision. If one eye only be thus affected, sympathetic disturbances may be set up in the other eye, unless enucleation be adopted.

The *prognosis* in syphilitic iritis is on the whole unfavorable. The acute affection, however, if promptly treated, often subsides without leaving any serious consequences. The chronic form, especially if attended with complications, very rarely terminates in complete recovery. As a general rule, the iritis which accompanies the exanthematous syphilides is of a more acute character than that which occurs at a later period.

Treatment of syphilitic iritis.—Active measures are generally necessary; mercury should be administered and the patient should be brought under its influence as speedily as possible. Two or three grains of blue pill may be given three times a day, and if it acts upon the bowels one-sixth of a grain of opium may be added to each dose. As soon as any constitutional effects are manifested the pills should be given less frequently. The good effects of the remedy are shown by the disappearance of the adhesions and deposits. The eye, of course, should be protected from all sources of irritation. The patient should remain in a well-ventilated and darkened room; he should wear a shade and should abstain from using the eye in any way. The pupil must be kept thoroughly dilated by means of atropine. Two or three drops of the solution of the sulphate should be applied to the eye several times a day, and this should be continued so long as any sign of inflammation remains. If the pain be very severe, the conjunctiva congested, and the superficial parts about the eye hot and throbbing, four or five leeches may be applied to the temples or around the margin of the orbit. If the

pain be of a neuralgic character and follow the course of some of the branches of the fifth nerve, it will be well to have recourse to hypodermic injections of morphia. The improved condition of the eye after a good night's rest will be evidence of the good effects of this remedy. When the symptoms have subsided, and the patient leaves his room, all sources of irritation, such as exposure to strong light, variations of temperature, cold winds, &c., *must be carefully avoided.*

When adhesions remain, the use of atropine and mercury must be continued for some time in the hope that absorption may take place. If no change is produced and the adhesions continue, a fresh attack of iritis is likely to supervene and to induce still more serious changes within the eyeball. Under these circumstances, a full trial having been made of mercury and atropine, the question of iridectomy will have to be considered. The operation is advisable in cases of repeated recurrence of inflammation, and when extensive synechiæ exist. It should be performed at a time when the inflammatory process is in abeyance. After its performance it rarely happens that iritis recurs. Another operation has been proposed, viz. to make a small incision into the cornea, and to separate the adhesions by means of a hook or forceps introduced into the anterior chamber. In cases in which the adhesions are only slight, the alternate use of eserine and atropine, as local applications, has been recommended. These two substances are directly antagonistic to each other in their action on the eye, and the alternate contraction and dilatation of the pupil tend to separate the adherent parts. In advanced cases, when the structures of the eye have become disorganised, enucleation may become necessary in order to save the other eye.

5. **Syphilitic Affections of the Choroid.**—Syphilitic choroiditis not unfrequently accompanies severe inflammation of the iris, due to the same cause, the anterior portions of the choroid being implicated in such cases. The choroid may also be affected independently, the lesion

manifesting itself either in the anterior or in the posterior part of the membrane. One eye is usually attacked ; but sometimes both are affected at the same time with choroiditis. Syphilitic choroiditis presents no symptom indicative of any specific origin ; the coexistence of syphilitic lesions elsewhere will assist the diagnosis, it being remembered that the majority of cases of choroiditis occur in syphilitic subjects.

When choroiditis supervenes upon an attack of iritis all the symptoms become much aggravated ; the power of vision is much diminished, pain becomes more intense, the vitreous humour looks cloudy, tension of the eyeball is lessened (owing to implication of the ciliary body) ; the patient complains of flashes or sparks before the eye, and there is sometimes effusion of blood into the anterior chamber. If the case be neglected the results are : destruction of the choroid and retina, atrophy of the iris and of the ciliary body, the formation of cataract, separation of the retina from the choroid, and total loss of vision.

The treatment is the same as that of syphilitic iritis, but mercury is still more strongly indicated. In the later stages, when the active symptoms have subsided, iodide of potassium may be given with benefit.

The anterior portion of the choroid may be affected independently of iritis, or the latter may be followed by an attack of choroiditis. The principal symptom is diffuse cloudiness of the vitreous humour, sometimes to such an extent that vision is all but lost. The haziness is probably situated in the anterior part of the vitreous. The pupil is dilated and there may be a painful sensation of tension in the eye, but there are no other very marked symptoms. The treatment is the same as that of iritis. Under the influence of mercury, the haziness clears up and power of vision is rapidly restored.

When the inflammation mainly affects the posterior portion of the choroid, the condition has been termed *choroiditis exudativa*, though opinions differ as to whether there is any exudation present, or whether the symptoms

are due to hyperæmia with subsequent atrophy, or to the latter change with or without new pigment-formation. The appearances visible on direct and ophthalmoscopic examination are somewhat variable. Four different forms have been described. 1. Superficial red or yellowish spots, occupying the periphery of the visible portion, and soon becoming atrophied and converted into shining white spots, or more or less surrounded by a circle of pigment. 2. More extensive, sharply defined spots occupying the centre of the fundus of the eye, bluish white or yellowish in colour, and causing great diminution of the power of vision. 3. A more diffuse exudation in the fundus, especially over the macula lutea, but extending towards the periphery, of a brilliant white colour, and causing almost total blindness. This form has been supposed to be especially characteristic of syphilis. 4. Uniform atrophy of the choroid, extending over a greater or less extent of the fundus of the eye and advancing concentrically towards the centre of the retina, and accompanied by the formation of irregular masses of pigment. In all these forms there is usually more or less extensive and complete atrophy of the superficial pigment, or in consequence of inflammatory metamorphosis, the cells coalesce and form black patches or flakes. These latter, associated with superficial atrophy of the pigment cells, are sometimes the only pathological appearance.

Haziness of the vitreous humour is the most frequent appearance in all forms of choroiditis. The haziness is seldom diffuse, but appears to be due to the presence of flakes or shreds or patches of a greyish or white tint. Sometimes these are fixed, and sometimes they appear to float freely about.

The course of syphilitic choroiditis is usually chronic; it may last for some months, improvements alternating with aggravations of the symptoms. In unfavorable cases the morbid process extends to the retina and optic nerve, or cataract may become developed. The *prognosis* under suitable treatment is, however, favorable. The

most unfavorable cases are those in which there is considerable exudation in the fundus oculi, in the neighbourhood of the macula lutea. The retina is apt to become involved. Mercury is the remedy to be relied upon. Under its use the vitreous humour regains its transparency and the flakes and patches become absorbed. The patient must of course be kept in a darkened room and strictly prohibited from using the eye.

6. **Syphilitic Retinitis** is a much less frequent affection than syphilitic iritis, and occurs in a later stage of the constitutional affection. Statistics show that it is found in from 3 to 4 per 1000 of all cases of syphilis. It is generally associated with changes in the choroid and opacities in the vitreous humour. The changes in the retina itself are less distinctly marked. Gummatous formations have not as yet been recognised, except in one or two cases, in which they appeared to have spread from the choroid.

Symptoms.—On ophthalmoscopic examination the fundus oculi is found to be covered with a more or less dense veil of opacity, apparently due to the aggregation of very minute dust-like particles. The opacity is generally slight, of a light grey colour, and distributed uniformly in the posterior, central, and lower portions of the vitreous body, but sometimes there are more or less distinct flakes. The margin of the optic papilla is not usually obscured, but is for the most part discernible behind the opacity. There is no apparent congestion of the vessels; on the other hand, the arteries are less marked than usual, and signs of hæmorrhagic extravasation are very rare. It sometimes happens that opaque streaks extend from the central opacity and float in various directions in the vitreous humour. Other streaks take the course of the retinal vessels. The opacity is sometimes sharply defined, but it generally shades off gradually into the normal clearness. Both eyes are usually affected, though not at precisely the same time.

Vision is impaired in various degrees; it is sometimes reduced to $\frac{1}{2}$, and sometimes as low as to $\frac{1}{10}$ or even

$\frac{1}{100}$ (even when the ophthalmoscopic appearances are not very marked), and rapid alterations occur in this respect. Considerable impairment is due to the existence of defects in the centre of the field of vision. Another and very constant symptom is hemeralopia; vision is much impaired when the supply of light is reduced. The patient finds himself unable to recognise the outlines of an object unless in full illumination, and is for all practical purposes blind on dull evenings. Specks of light before the eyes are sometimes complained of, and external objects often appear changed in form and size. Iritis occasionally coexists as a complication.

The symptoms may remain without marked alterations for a considerable time; under suitable treatment they disappear more or less rapidly and completely. Relapses are, however, generally observed, and a recurrence of these will probably result in atrophy of the retina and loss of vision.

Some observers deny the existence of a syphilitic retinitis, and refer the symptoms to inflammation of the choroid. It would seem, however, that the appearances of this latter affection are of a somewhat different character; that the opacity is not seen to extend itself along the course of the vessels, and that iritis is a much more frequent complication of choroiditis than of retinitis.

The *treatment* consists in the administration of mercury; and if no good effect be produced, iodide of potassium may be tried. The patient must be forbidden to use the eye; he should be kept in a darkened room, and wear dark spectacles or a shade.

Other forms of retinitis have been described as due to syphilis. One of them, termed by Graefe "central relapsing retinitis," is characterised by the sudden appearance of cloudiness or of minute opaque whitish spots, over and about the macula lutea. These soon disappear, and then recur in the course of a few weeks, and such alternations may take place twenty, thirty, or more times. The impairment of vision is considerable and may become permanent;

recovery, however, is the rule under mercurial treatment. The complaint occurs, though not at the same time, in both eyes, and, as it would appear, only in very advanced stages of syphilis.

Retinitis pigmentosa (pigmentary degeneration of the retina) has been regarded as due to syphilitic infection; but it is not improbable that the changes described as those of pigmentary retinitis, are really due to severe choroiditis, ending in proliferation and irregular deposit of pigment.

The affections of the eye due to syphilitic lesions external to the eyeball remain now to be described. These extraocular lesions may be divided into three classes: 1. Gummatous growths in any portion of the brain or its membranes. 2. Gummatous growths at the base of the skull involving the optic tract, commissure, or nerves. 3. Independent syphilitic inflammation of the intracranial portion of the optic nerve. The morbid appearances visible within the eye are swelling of the optic papilla, or optic neuritis, and atrophy of the optic nerve.

7. **Optic Neuritis.**—This is a frequent accompaniment of cerebral tumours, and especially of gummatous growths situated at the base of the brain, and involving the optic tract, the commissure, or the optic nerves themselves. There is, however, nothing characteristic of syphilis in the ophthalmoscopic appearances, which consist mainly of swelling and prominence of the optic papilla, with more or less tortuosity of the central vein. The condition has been supposed to be due to œdema of the connective tissue which unites the nerve-fibres, and it may exist in a very pronounced degree without affecting vision; but its presence in any given case is strongly indicative of a cerebral tumour, probably of a syphilitic nature. In all cases of suspected cerebral syphilis the eyes should be very carefully examined. The existence of optic neuritis will supply an important indication for treatment, which consists in the careful and persistent administration of

mercury. Relapses may be expected to occur, and atrophy of the optic nerve is a not unfrequent result in cases in which the other cerebral symptoms disappear, or remain in abeyance for some time.

The intracranial portion of the optic nerve is sometimes the seat of syphilitic inflammation. The symptoms and ophthalmoscopic appearances are those of optic retinitis, viz. swelling of the optic papilla, contraction of the field of vision, and diminished visual power. In a few fatal cases that have been placed on record, the post-mortem examination showed considerable thickening of the optic nerve, extending from the optic foramen to the commissure. This swelling was due to the presence of an immense number of small round and oval cells, deposited between the fasciculi, many of them being in a state of fatty degeneration. In other cases the nerve has been found reduced to a pulpy mass consisting of the remains of nerve-fibres, granules, lymphoid cells, and amyloid bodies. Induration of the nerve has been also found. It is evident that these different conditions will induce very varying kinds and degrees of visual disorders.

A marked case of syphilitic lesion of the optic nerves was recently under my care. The patient had contracted syphilis when twenty-one years of age. Six weeks after infection roseola appeared and at the same time several large *rupial* spots were developed on the chest, arms, and legs. He was treated by the late Mr Skey with his favourite remedies, viz. the iodide of potassium and bark. The rupia soon disappeared, but the roseola remained for some time, and then slowly subsided. For twenty years afterwards the patient remained quite free from any further symptoms. Three years after the infection he married, and had eight perfectly healthy children. He spent most of his time in the country, leading a healthy, temperate life. At the end of the twenty years, whilst on board ship, he was suddenly seized with diplopia. He consulted an oculist abroad who prescribed galvanism. On his return to England he came to me complaining of a nasty

taste in his mouth. I found a large ulcer, presumably syphilitic, at the upper part of the posterior wall of the pharynx. He mentioned his eye-affection and I took him to the late Mr Critchett, who found considerable impairment of visual power, and diminution of the field of vision. Mercury and iodide of potassium were administered for three months, but without avail, and many leading ophthalmologists were consulted. Mr Critchett sent the patient to Prof. Donders, by whose advice treatment with mercury and the iodide was pushed still further, but the patient's vision grew worse and worse and his general condition was much impaired. Total blindness speedily supervened, and he died within a year from the appearance of the symptoms. On post-mortem examination the optic commissure was found to be softened, but there was no gummatous or other lesion in the brain.

8. **Atrophy of the Optic Nerve** in syphilitic cases may be due to gummata in the orbit or brain, or to diseases of the bones at the base of the skull. As a general rule, it originates from the pressure of tumours or exostoses affecting some portion of the nerve. It may become developed in the absence of any other cerebral symptoms, and it is sometimes associated with violent and persistent headache, hemiplegia, and paralysis of the third nerve. If these latter symptoms are present, the syphilitic nature of the eye-affection is strongly indicated. It is important to determine the true cause of the disease, inasmuch as atrophy of the optic nerve due to non-syphilitic causes would be made worse by mercurial treatment. The syphilitic affection occurs in young subjects, in whom atrophy of the optic nerve due to other causes is very rare. The symptoms are: Contraction of the field of vision and much diminished visual power. The optic nerve assumes a bluish-white colour; the arteries are small and indistinct.

The treatment consists in the careful administration of mercury, which may be followed by iodide of potassium. If neither of these remedies produces any good result,

little benefit can be expected from treatment. Strychnia may, however, prove of service, and should be tried after failure of the above-mentioned remedies.

9. **Paralysis of the Muscles of the Eye.**—This symptom is sometimes noticed in the later stages of syphilis; the external muscles, the ciliary muscle, and the sphincter of the pupil being thus affected. These paralyses are sometimes associated with optic neuritis and atrophy of the optic nerve. They are caused by pressure on some portion of the trunk of the affected nerve, and are seen in cases of periostitis and gummatous tumours of the orbit, in exostoses involving the optic foramen or the sella turcica of the sphenoid, and in cases of gummatous tumours at the base of the brain.

The symptoms vary according to the seat of the lesion and the nerve or nerves implicated. When one or more of the ocular muscles are paralysed, double vision is a marked symptom. When the paralysis attacks the third nerve which supplies the levator palpebræ, the sphincter of the pupil, the ciliary muscle, and all the external muscles of the eye, excepting the external rectus and the superior oblique, the upper lid falls, the pupil is dilated, and the eye looks outward. When the sixth nerve is attacked the eye is turned inwards, and there is double vision of all objects on the outer but not on the inner side. Sometimes separate branches of the third nerve are paralysed, and all these paralyses are not unfrequently accompanied by retinitis, choroiditis, and iritis, and when the cause of the paralysis is a tumour in the orbit, by exophthalmus. The coexistence of any of these symptoms is strongly indicative of a syphilitic origin. Either one or both eyes may be affected. The presence of optic neuritis, or of atrophy of the optic nerve, points to the existence of an intracranial lesion.

Treatment.—As for the lesions previously described, mercury and iodide of potassium are the remedies to be relied upon. The latter must be given in full doses if there be evidences of periostitis of the orbit. If the

symptoms point to intracranial disease, *e. g.* gummatous tumour of the brain, a prolonged mercurial course is especially indicated. Experience has shown that even very severe structural changes may be repaired under proper treatment. Further details on this subject will be found in the chapter on syphilitic affections of the nervous system.

There remain for notice a few symptoms connected with the eyes, and dependent upon syphilitic cerebral lesions, but in which there are no marked ophthalmoscopic appearances. Amblyopia and even amaurosis sometimes occur in cases of cerebral syphilis, in which nothing particularly abnormal is seen in the fundus of the eye. In these instances it may be supposed that the symptoms are due to ischæmia, the result of syphilitic disease of the vessels of the anterior part of the brain. The calibre of these vessels being reduced, the nutrition of the optic nerve is injuriously affected, and its functional capacity is considerably impaired. The symptoms are for the most part transitory, and relapses alternating with improvements are often noticed. The amblyopia sometimes takes the form of hemianopia. It must not, however, be inferred that all cases of syphilitic amaurosis without ophthalmoscopic signs are due merely to ischæmia. Such signs may be very slight, if not altogether wanting, in cases of total blindness, the result of gummatous tumours affecting the commissure of the optic nerves, or due to intracranial neuritis.

CHAPTER XIX

SYPHILITIC AFFECTIONS OF THE EAR

The manifestations of syphilis can sometimes be observed in the organ of hearing, and each of its three divisions is liable to be affected. Primary syphilitic ulcers are not unfrequently seen on the external ear, the virus having been communicated from the tongue or lips of a person suffering from primary or secondary lesions of these parts. The external ear is likewise occasionally the seat of various secondary eruptions, differing, however, in no respect from those appearing elsewhere. Mucous patches, sometimes with soft and fungous granulations, are occasionally found in the external meatus, and covering the membrana tympani. These cause deafness and are the source of more or less discharge. When persons suffering from perforation of the membrana tympani contract syphilis, it has sometimes been noticed that the purulent discharge from the ear, impregnated with the syphilitic virus, has caused the development of mucous papules. Ulcerations due to syphilis have also been observed; some at or near the entrance to the meatus; others more deeply seated, and sometimes involving the membrana tympani and causing perforation of that structure. Exostoses of the bony canal are occasionally seen in syphilitic patients; their growth is very slow, and they do not cause pain; but they obstruct the canal to a greater or less extent. Gummatous growths are of rare occurrence in the structures of the external ear.

The tympanum, or middle ear, is the part of the organ most frequently affected, owing to the extension of syphi-

litic lesions from the throat and nose. The membrana tympani and the mucous membrane lining the cavity become infiltrated and thickened, the ossicles are more or less changed, and eventually the membrane may become perforated by ulceration, the result of inflammation of the tympanic cavity. When this is the case, all the structures are more or less disintegrated and purulent discharge escapes from the ear.

The most prominent symptoms are tinnitus aurium, deafness, and severe deep-seated pain, the latter being much aggravated at night, and not subsiding even after perforation of the membrana tympani. The pain sometimes extends to the mastoid process and temple, and it sometimes happens that the inflammation spreads from the mastoid cells to the periosteum covering the mastoid process. If the morbid process be confined to the Eustachian tube, the ordinary symptoms, of which deafness is the most prominent, will be noticed. Besides being extensively ulcerated, the mouth of the Eustachian tube may be blocked up by infiltration or warty excrescences; and obstruction, either partial or complete, is sometimes due to the contraction of cicatrices the result of ulceration. When the inflammation is very severe, the structures of the labyrinth are also liable to become affected; extravasation of blood may take place resulting in sudden deafness of an incurable character. In cerebral syphilis subjective symptoms connected with the organ of hearing are occasionally present. Deafness sometimes results from intracranial syphilitic lesions; a gummatous tumour, for instance, in the middle fossa of the base of the skull, has been known to compress the auditory nerve and destroy its function. It is doubtful whether the nerve itself is ever inflamed as a consequence of syphilis, but its function is liable to become impaired during the course of the disease. With regard to deafness as a symptom of syphilitic lesions of the ear, this sometimes affects both sides, but it is more frequently unilateral, especially when it depends upon disease in the

pharynx. It is an early symptom when the tympanum is the seat of disease. Mr. Dalby has observed that during the development of secondary symptoms patients often become deaf, without any disease of the external or middle ear, and recover their hearing under constitutional treatment. In such cases, the loss of hearing is symmetrical, and vibrations through the cranial bones are either not heard at all or heard imperfectly. Not long ago a patient thus affected was sent to me by Mr. Dalby who suspected syphilis to be the cause of the symptoms. I was able to confirm this suspicion, and the patient completely recovered his hearing after a course of anti-syphilitic treatment. Affections of the ear occurring in the course of hereditary syphilis will be described in a subsequent chapter.

The *diagnosis* of these affections is to be formed not from the symptoms alone, but from the history of the case and the concomitant manifestations. Some other definite lesion or traces of syphilis are almost certain to coexist. The *prognosis* varies according to the seat and extent of the mischief. Affections of the external ear generally subside under appropriate treatment. Affections of the middle and internal ear are of very serious import; hearing is generally lost or very much impaired.

The *treatment* of these affections must be conducted on general principles, regard being paid to the cause. Mucous papules may be brushed over with a mixture of calomel and oxide of zinc. Lesions of the throat must be treated as described in the chapter on those affections. For lesions of the middle ear, leeches, fomentations, counter-irritation, and iodide of potassium internally will probably be required, and likewise morphia to relieve the pain.

CHAPTER XX

SYPHILITIC AFFECTIONS OF THE NERVOUS SYSTEM

The connection between syphilis and many disorders of the nervous system has been recognised for a considerable period, but it is only in modern times that the nature of the lesions has been satisfactorily demonstrated. Syphilis has been clearly shown to affect the nervous system in three different ways. In the first place, it affects the bones of the skull and the membranes of the brain, producing exostoses, thickenings, and gummatous deposits, which, according to their position and extent, more or less interfere with, or damage, portions of the brain itself or nerves proceeding from it. Secondly, syphilis gives rise to thickening and occlusion of the vessels which supply the brain with blood, and consequently to disturbance of nutrition of the nervous substance, and to further serious changes. Thirdly, the most characteristic lesions of syphilis, viz. gummata, are found in the brain, where they give rise to symptoms of various kinds, but generally of a marked character.

Not only the brain but the spinal cord is the occasional seat of syphilitic lesions. These consist, for the most part, of chronic inflammatory changes in the bones of the spinal column, in the membranes and in the substance of the cord itself. The peripheral nerves are likewise affected, generally by the pressure of gummatous tumours or exostoses. Examples of this kind are seen in the orbit, and have been already referred to (see p. 217).

With regard to the stage of the disease with which nervous disorders are most commonly associated, it was

formerly believed that these latter invariably occurred at a late period, and they were therefore classified among the so-called "tertiary" symptoms. Careful and extended investigations have, however, clearly shown that disorders of the nervous system may occur at a very early period of constitutional syphilis, and at any subsequent time. Cases occur during the first year after infection, and a few instances have been placed on record in which the interval was less than six months.

In these latter, the symptoms are for the most part due to syphilitic lesions of the cerebral arteries rather than to gummatous or bony new formations. Allusion has already been made (see page 26) to the frequency, observed by the author, with which *early rupial ulceration* is followed by the speedy development of *cerebral* symptoms. It appears likely that the syphilitic virus *per se* can produce nervous diseases, but it is probable that in many cases other causes cooperate, and may, so to speak, give a direction to the action of the poison. Among these may be mentioned, excesses, sexual and otherwise, abuse of alcohol, oft-repeated mental and bodily over-exertion, exposure to cold, and other injurious influences, and hereditary predisposition to nervous disorders.

The peculiar liability of the cranial bones to be attacked by syphilitic inflammation has been alluded to in a previous chapter, and it often happens that the development of these lesions produces more or less serious disturbance of the functions of the brain, as a result of pressure on some portion of its surface or on the nerves proceeding from it. Thus, exostoses close to the stylo-mastoid foramen, and in the internal auditory meatus, may cause paralysis of the facial and auditory nerves respectively, and in like manner a similar growth on the body of the sphenoid may so compress the optic commissure as to produce total blindness. With regard also to the cerebrum itself, numerous cases have occurred in which exostoses of the vitreous table of the skull, and thickenings of the dura mater, have induced marked cerebral symptoms, such as

intense headache, obstinate vomiting, giddiness, tremors, loss of sensation, hemiplegia, and convulsions of an epileptiform character. Other affections of the bones, of a more acute and destructive kind, such as suppurative periostitis, necrosis, &c., may give rise to similar symptoms, and likewise to those of meningitis and cerebral abscess. Owing to this obvious dependence of many nervous affections upon syphilitic lesions of the bones, the earlier authors believed that the latter were the exclusive cause of the former, which they regarded as always associated with the tertiary stages of the disease. More careful observations, however, demonstrated the fact, already referred to, that nervous affections occur also in the early stages of syphilis, and in patients who show no signs of any bony lesion. There seems little doubt that the membranes of the brain may be affected at an early stage, and quite independently of any change in the bones. Paralyses of various kinds have been observed to occur with the earliest symptoms of constitutional syphilis, and to subside rapidly under anti-syphilitic treatment. The paralysis may implicate certain nerve-trunks, or one or more limbs, motion being more affected than sensation. Mental disorder is not very uncommon, but the nerves of special sense are rarely affected. In some cases the symptoms supervene very rapidly; headache is usually complained of, and this may be followed by such symptoms as hemiplegia, associated with rigidity of the arm and leg, aphasia, paralysis of the motor oculi and other cranial nerves, loss of power over the sphincter ani, retention of urine, &c. The violence of the attack distinguishes these symptoms from those which are apt to occur in the later stages of syphilis.

With regard to the pathological condition to which those symptoms are due, it may be assumed that it consists in more or less acute inflammation of the pia mater and arachnoid, or in certain vascular changes, to be presently described. The early syphilitic eruptions develop themselves with great rapidity, and the same peculiarity is observable in the setting-in of syphilitic iritis; and it may

be supposed that the pia mater, in the cases under discussion, is the seat of inflammatory changes attended with the formation of deposits and adhesions. Thickenings of the membranes at the base of the brain have been observed in fatal cases of early cerebral disease, the result of syphilis. In a case of chronic meningitis, the symptoms of which, viz. hemiplegia and marked imbecility, appeared six months after infection, the pia mater was found to be strongly adherent to the convolutions over the entire surface of the brain, while the arachnoid over the convexity of the hemispheres was considerably thickened, and almost of the consistence of felt.

Circumscribed inflammation of the pia mater would appear also to be the pathological condition to which syphilitic epilepsy is generally due. Irritation of the cortical substance of the brain is caused by the adhesions of the membranes, and the pressure exercised by the thickened portions. The same morbid conditions may likewise give rise to symptoms resembling in some respects progressive paralysis of the insane. Small nodular growths, some confluent, others isolated, are sometimes found in the pia mater and arachnoid.

In the second class of lesions by which syphilis manifests itself in the brain, the vessels, and especially the small arteries, are the structures which are principally implicated. Syphilitic lesions of the cerebral arteries may be caused by the development of gummatous growths, or they may exist independently. In either case the arteritis is followed by inflammation and softening of the cerebral substance.

Syphilitic arteritis has been carefully studied and described by Heubner and Cornil, and the process may be stated to be as follows :—The first step is the new formation of endothelial cells on the internal surface of the artery. The deposit takes place in layers, and fills up the openings or depressions in the fenestrated membrane so that the surface of the artery becomes smooth and

regular. The layer of newly formed cells separates the fenestrated membrane from the endothelium. The coats of the artery being thus increased in thickness, its calibre is reduced and its elasticity and dilatability are more or less diminished. As the process goes on, the endothelial layer is raised at one or more points by the deposit, and projects into the vessel, thus still further reducing its calibre and favouring the development of a thrombosis. This last peculiarity of the appearances, the projection of the endothelium, is believed to be characteristic of syphilitic arteritis. The change often occurs with considerable rapidity ; the calibre of the affected vessels is much diminished and sometimes quite obliterated, the arteries being converted into fibrous cords. The rapidity of the process and the fact that the smaller arteries are especially implicated distinguish it from atheroma. Other differences and the relations of the process to aneurism have been discussed in the chapter on syphilitic affections of the organs of the circulation. The changes in the brain-substance directly referable to the disease of the arteries, consist of softening and disintegration in patches of the parts supplied by the branches of the vessel. Distinct occlusion of the arteries can sometimes be detected, but when the softening is considerable, the coagula may not be recognisable. The posterior cerebral artery and its branches would appear to be most frequently affected.

Even more characteristic lesions than those just described are not unfrequently found in the brain, in the form of gummatous nodules. Of these there are two varieties, large and small. The former occur in various portions of the brain, in the cortical and medullary substance, in the optic thalamus and corpus striatum, and likewise in the pons Varolii and cerebellum. In some cases the growths are comparatively superficial and involve certain of the nerves at the base of the brain, *e.g.* the optic, the third, the sixth, and the seventh, causing para-

lysis or disorder of function. The gummatous tumours are often multiple, and they vary much in dimensions. They have been minutely described by Virchow, Charcot, and Cornil. On section the surface presents two zones; the outer one is pinkish and semi-transparent, and occupies the smaller portion of the growth; the inner or central portion is opaque, yellow or gray, dry and hard. The transition from the normal brain-substance into the growth, and from the periphery of the latter into its central portion is, in both cases, gradual. The surface of the tumour sometimes projects; at other times, owing to atrophy of its centre, it is depressed. The growth itself forms a consistent mass, harder and more solid than the surrounding substance. It consists of nerve-fibres and of numerous round cells, resembling granulation-cells, and also of a number of stellate cells with long, rigid prolongations. The blood-vessels are covered by these cells, but are not obliterated, as occurs in the condition described in the previous paragraph. In the central portion of the growth, very few nerve-fibres can be demonstrated, and the appearances are those of caseous or of granular degeneration. Fat-crystals are also discoverable. The accumulation of the cells and the compression of the vessels has produced general atrophy. It seems probable that in the brain, as in other organs, the gummata may undergo a process of softening and absorption, leaving behind them either a cicatrix or a small cyst surrounded by cerebral substance, more or less softened and inflamed. Such conditions, however, are more generally due to endarteritis.

The smaller gummata are situated in the tissue of the pia mater, and are generally to be found in connection with the arteries at the base, and the posterior and middle cerebral arteries. They form small grayish-yellow nodules, some of them as large as a small bean. They cause compression of the vessels, and more or less penetrate and mingle with the adjacent gray matter. They set up chronic arteritis, with all its consequences, viz. thickening of their coats, thrombosis, and obliteration of

their calibre, and softening of the cerebral substance as a final result. Fibrous thickening of the vessels is another secondary change. It therefore appears that arteritis may either be the consequence of gummatous formations, or may be separately induced. In a few cases gummata are found in one portion of the brain, while signs of arteritis exist in another, the two processes going on independently of each other.

There is seldom much difficulty in distinguishing gummatous formations in the brain. Tubercular growths are the only ones which closely resemble them. The former are, however, generally single, and more regular in form; they do not send prolongations into the neighbouring cerebral tissue. Like gummata, they present a cortical and a medullary portion, but the latter is always more marked and extensive than the corresponding portion of a gumma, and the circumference is sometimes dotted over with minute miliary tubercles, semi-transparent and easily recognisable. Complete obliteration of vessels is more common in connection with tubercles than with gummata. A tuberculous growth is sometimes surrounded by a loose layer of connective tissue; a gummatous growth passes gradually into the healthy brain-substance. When the post-mortem appearances are of an uncertain character, the clinical history of the case will generally aid the diagnosis. Patches of sclerosis more or less resemble gummata in process of transformation, but they are distinguishable therefrom by the fact that they present no differences between the centre and circumference, and do not undergo cheesy metamorphosis. Gliomata do not form circumscribed tumours; they present a well-marked reticulated appearance. Their consistence varies from that of healthy brain-substance to that of medullary cancer. On section the cut surface usually shows a number of vessels. The tissue is soft and uniform, and very vascular throughout its substance.

The symptoms of cerebral syphilis are of a very varied character, and it cannot be said that *any one of them is*

characteristic or pathognomonic of the nature of the disease. The peculiar way, however, in which certain symptoms are grouped together, their mode of appearance and their modifications during the course of the disease, are often strongly suggestive of a syphilitic origin, especially if other factors appear to be absent. If, however, a patient with cerebral symptoms exhibits evidences of syphilis, such as affections of the skin or mucous membrane, or of the bones or periosteum, it will, in the large majority of cases, be safe to conclude that the cause of the cerebral troubles is the same with that of the external and therefore more obvious manifestations. In such cases the diagnosis is perfectly easy, but it sometimes happens that symptoms of cerebral syphilis do not supervene until many years have elapsed since the primary lesion. If the secondary manifestations have been slight and transient, the connection between the present symptoms and the long-forgotten infection may be very difficult to establish. It must also be remembered that cerebral symptoms due to other causes may, and not unfrequently do, occur in patients who have, at some period or other, suffered from syphilis, and it may be difficult, or even impossible, to assign the right value to each factor.

Again, in cases presumably of syphilitic origin, other causes may have lent their aid in producing or heightening the effects. Dissolute habits, excesses of various kinds, especially in alcohol, exposure to great heat or cold, injuries to the skull or peripheral nerves, diseases of other organs —these and similar causes may co-operate with syphilis in producing brain-disease, may modify the symptoms and may impart some particular direction to the action of the virus. Finally, some disease or proclivity to disease may have been latent in the brain, and have been fanned into a flame by the irritative action of the syphilitic poison. All these contingencies must be borne in mind when an attempt is made to establish a diagnosis of syphilis in a given case of brain-disorder.

The symptoms met with in cases of cerebral syphilis

may be arranged in three groups. The first includes disorders of sensibility; the second, disorders of motor power; and the third, various psychical disturbances.

1. Disorder of sensibility varies much in kind and degree, from slight discomfort or uneasiness to the most violent pain, and from slight loss of sensation to complete anæsthesia of various parts of the body. Headache is the most frequent symptom of increased sensibility. It often occurs at an early stage, associated with or preceding the eruptions. At a later period, it may be due to gummata, or to periostitis or ostitis. It is generally worse at night, and is frequently accompanied by giddiness and mental confusion. The pain is at times almost intolerable, and may be the only symptom for a considerable period. If relief be speedily afforded by the administration of large doses of iodide of potassium, there can be little doubt as to the cause of the symptom. If the remedy be withheld and the headache persist, other symptoms, such as loss of memory, especially for certain words, loss of capacity for thought, general diminution of intellectual faculty, convulsions, and even attacks of epilepsy, will probably be superadded. Formication and numbness are sometimes complained of. Sometimes there is marked general hyperæsthesia; the slightest touch causes the patient to wince and scream.

2. The disorders of motor power are very varied as regards their seat and extent. Sometimes they amount to actual paralysis and sometimes to mere weakness, and there are grades of many kinds between these extremes. It often happens that the first indication is paralysis of one of the nerves at the base at the cranium, and the third is the nerve most frequently attacked. The symptoms of these paralyses and of those of lesions affecting the optic nerves have been referred to in a previous chapter. They consist of external strabismus, ptosis, dilatation and immobility of the pupil, and diplopia. Sometimes the fourth nerve is paralysed, sometimes the sixth, and the portio dura of the seventh. Partial paralysis of an extremity is

another symptom. Sometimes only the leg on one side is affected at first, and the arm subsequently becomes weak, and then paralysed. If the paralysis be on the right side, it is generally accompanied by aphasia. The hemiplegia is not sudden, as in cases of apoplectic hæmorrhage, neither is it attended with loss of consciousness. Prolonged somnolence, amounting to stupor, is often associated with it. This symptom is probably due to constriction of the cerebral vessels, as described at the beginning of this chapter; it is often only temporary, the restoration being caused by the establishment of collateral circulation, or by the capacity for accommodation to changes of vascular tension possessed by the nervous system.

The aphasia, which is so frequent a symptom of cerebral syphilis, presents various peculiarities. The condition is at times intermittent, presenting exacerbations, and is often attended with a gradual or sudden loss of power of the right side. When aphasia is fully developed, the patient is able to utter only one or two short words, or portions of words, and he is apt to use these on all occasions. Sudden attacks of complete aphasia are sometimes noticed. These may pass off, and again and again recur, until the condition becomes permanent. In other cases the aphasia is incomplete. The patient omits words, syllables, or letters in his speech, and the same defects are observed in his writing. In other instances, the speech is slow and delayed, as if thought had become difficult; or certain affixes or prefixes are joined to each word that the patient utters. Sentences are also divided and broken in a peculiar way; words are wrongly arranged and some are left out. Sometimes the aphasia is due to the fact that the spoken or written word is no longer retained in the memory. The idea exists, but the patient cannot find words wherewith to express it, though he recognises them when repeated to him. The same defect is observed in writing; the patient finds it impossible to write some words, and can write others only after they have been shown to him. All these variations of aphasia frequently coexist with right hemi-

plegia, and are supposed to be due to lesions of the posterior part of the third left frontal convolution. The lesions probably consist, in the majority of cases, of changes in the arteries, such as have been already described. When gummata are present, the symptoms are of a more permanent character, and do not subside and recur. General weakening of the intellect sometimes coexists with and complicates the aphasia. The patient, in advanced cases, may become almost or quite imbecile, and the peculiarities of his speech will become changed in character during the development and further progress of this condition.

Convulsive symptoms of varying extent and severity frequently occur in the course of cerebral syphilis. Sometimes there are only a few spasmodic movements of certain muscles, while in other cases there are decided attacks of an epileptic nature, and characterised by spasm of the facial muscles, clonic convulsions, and biting of the tongue. Epileptiform convulsions constitute one of the most frequent manifestations of cerebral syphilis; they vary much in character, but are always a sign of severe mischief. Their invasion is usually preceded by other symptoms referable to the nervous system. These are: prostration or diminution of corporeal and mental power; a certain amount of wasting; various dyspeptic symptoms; and severe headache, first confined to a small space and afterwards extending over the vertex, and continuing for weeks or months. The convulsions first appear in the face, or in one of the upper extremities, rarely in the lower extremities. They are followed by a state of unconsciousness, usually of brief duration, but succeeded by dulness of mind and confusion of ideas, and in some cases, by difficulty of speaking. In severe cases the convulsions continue for several hours, and they may recur at short intervals during several days. Charcot states that the invasion of the convulsions is frequently announced by an exacerbation of the headache, often localised in a spot in the right parietal region. The pain becomes of a throbbing character, and at the end of some minutes, seems to spread over half the

face and neck of the same side. These premonitory phenomena last for several minutes, and in some cases the patients have almost always time to get to bed and lie down. Then the upper limb of one side becomes much flexed at the wrist and elbow-joint, and at the same time pronated; rhythmical shocks are then experienced, the arm is shaken, and the hand is jerked round towards the left shoulder; at the same time the muscles of the same side of the face are thrown into convulsions. The lower extremity on the same side then becomes stiff and afterwards convulsed. In some cases the other half of the body exhibits similar symptoms. Loss of consciousness now supervenes, during which the convulsions continue. These finally cease, and, after a period of stupor, the attack passes off. In other cases, loss of consciousness is the first symptom, or immediately follows the convulsive tremors. In cases in which the lesions are of a slight character, the patient remains free from attacks during intervals of greater or less length. If the attacks frequently recur, progressive extension of the lesion may be suspected, and permanent and incurable hemiplegia is likely to supervene. Optic neuritis and various mental disturbances often occur in cases of syphilitic epilepsy. Charcot points out that, according to a recent theory, the gummatous patches in partial epilepsy ought to be situated on the surface of the frontal or ascending parietal convolutions, or, at all events, in their immediate neighbourhood.

The symptoms of motor paralysis in cerebral syphilis vary much in intensity, and as regards the parts affected. The paralyses of the motor nerves of the eyeball have been already alluded to. The facial and the hypoglossal are sometimes affected. Paralyses of certain groups of muscles, and even of single muscles, are occasionally observed. Sometimes a paralysis of this kind exhibits a tendency to spread. Thus, for example, the right arm may be first affected, and some weeks or months afterwards, paraplegia may appear and be followed by paralysis of the bladder,

rectum, left arm, and some of the muscles of the neck, &c. The symptoms may closely resemble those of general paralysis of the insane, but are distinguishable from them by the following peculiarities, according to Dr. W. G. Mickle:—1. Distinct history or symptoms of syphilis. 2. Preceding headache, nocturnal and intense. 3. Less marked and persistent excitement and restlessness than in general paralysis. 4. The frequent coexistence of paralysis of one or several cranial nerves. 5. The greater frequency of optic neuritis, early amaurosis, deafness or vertigo. 6. The paralysis of articulation. 7. The occurrence of meningitis. 8. The variety of the sensory and motor symptoms, their capricious association and succession, and by the absence of the general progressive muscular paresis of the other disease. 9. By the effect of anti-syphilitic treatment.

The fragmentary and apparently capricious manner in which the symptoms appear is a marked peculiarity of cerebral syphilis; and this feature is also observed as a characteristic of the psychical disturbances which remain to be described.

3. The psychical disturbances vary from an abnormal excitement to violent delirium or mania, and between these two extremes there are numerous and varied stages. In another class of cases there are various degrees and kinds of mental debility, as regards the will, the memory, the understanding and the disposition; and the changes observed may be very slight or may amount to a condition of complete imbecility or dementia. There is, however, nothing characteristic of syphilis in the form or intensity of any one of these symptoms; but their mode of invasion and the manner in which they are grouped, will often indicate their cause with greater or less probability.

A condition of excitement, amounting it may be to mania, is not uncommon; but a condition of fatuity amounting to imbecility is more frequently observed. The memory is defective, and the current of the thoughts is slow and interrupted. There are occasionally attacks resembling

hysteria; the patient laughs or cries, or appears childishly excitable, or fretful, or obstinate. Giddiness, transient loss of consciousness, sleeplessness, and headache are frequent accompaniments. The aphasia, which is so often observed, has been already referred to. A decided change is sometimes noticed in the patient's habits, the alteration being always for the worse. It would seem, however, as if the change were of a passive character, and dependent rather upon an apathetic and listless condition of mind, than upon the abnormal development of any customary or latent impulses. Thus, a patient, previously cleanly and particular in his habits, may speedily attain such a condition of indifference as to pass his urine and fæces in his bed or on the floor of his room. There is no paralysis of the sphincters, no stupor, no delirium; but all at once, as it were, the patient seems to have become altogether indifferent, and devoid of any sense of cleanliness. He may evince similar indifference with regard to the duties and pleasures of life; may altogether neglect the former and appear to forget the attractions of the latter. The sexual desire is generally changed; there is sometimes great diminution and sometimes marked exaltation. This latter condition is especially common during maniacal paroxysms, in which intense sexual excitement, amounting to satyriasis, is not unfrequent.

As a matter of course, these psychical disturbances are associated, in the most varied way, with one or more of the motor or sensory disorders already described, and the combination of the symptoms is of much greater value as regards diagnosis than any single symptom. These peculiar combinations are explained by the fact that in syphilis the lesions are not limited to single spots, but, on the contrary, involve and disturb the functions of various parts of the brain.

It often happens that the subsequent history of the disease affords much more decided evidence of its syphilitic nature than the original symptoms themselves, either individually or collectively. The symptoms are some-

times permanent, but vary in intensity and in the manner in which they are grouped. On the other hand, they are often transitory and variable, and subside and recur in an indefinite manner and degree. Fatal results may speedily supervene, or rapid improvement may take place. Sometimes there are slight prodromal symptoms, and sometimes the severer troubles become developed at once. The alternation of the symptoms is a marked peculiarity. The parts first attacked may be recovering; paralysis of the arm, for instance, may be disappearing, when suddenly or gradually ptosis sets in, or strabismus and diplopia are observed. On the other hand, this alternation of symptoms is not a constant phenomenon. In some cases, the course from the beginning is from bad to worse; epilepsy is followed by imbecility, stupor, coma, paralysis of various parts, and death. The effect of treatment is, however, often witnessed under the most threatening circumstances. Even without appropriate treatment the severe symptoms may subside, and the condition may become chronic and marked by relapses and improvements. After a while, perhaps, the attack recurs with more than its original severity, and fresh symptoms are superadded. All these variations are to be accounted for by the peculiarities of the anatomical lesions. When the successive paroxysms exhibit these marked differences of character, the syphilitic nature of the attacks is strongly indicated.

The various phases which syphilitic affections of the nervous system so often present, are well illustrated by the following case :—A gentleman, now aged forty-four, contracted syphilis fourteen years ago. Habits always temperate; chest somewhat delicate. He was treated by me principally with the mercurial vapour bath, as the internal use of the drug was not well borne. Six months after infection, an eruption of rupia appeared, accompanied by very large nodes on the inner side of the head of each tibia (the patient was in the habit of hunting several days a week). Iodide of potassium was given internally and the iodine liniment was applied to the nodes. All the sym-

ptoms soon subsided, and the patient remained in excellent health for eleven years, when he was suddenly seized with an attack resembling epilepsy, which left behind it a general weakness of the left leg and dragging of the left foot. Under treatment with the bromide and iodide of potassium, the lost power was almost entirely regained. A year afterwards another attack supervened, and resulted in a similar condition on the right side, accompanied by aphasia. This latter symptom gradually passed away and the patient's condition fluctuated, exacerbations alternating with improvement. Eventually both legs became paretic and there was loss of sensation in the whole of the left leg, and up the back as far as the first dorsal vertebra. The right arm also gradually became weak and there was some loss of power of the sphincters. At one period there was a good deal of "girdle-pain." The aphasia has recurred several times, and transient delusions have also been noticed. The patient is now gradually getting weaker; dropsy has set in, and bedsores have broken out in spite of all precautions.

The prognosis of syphilitic affections of the brain is, in the majority of cases, favorable, provided always that the patient is subjected to early, appropriate, and continuous treatment. Fournier states that of 90 cases of cerebral syphilis, the results showed that 30 were cured, 13 improved, and 33 unrelieved by treatment, while 14 died. The improvement is more likely to be permanent when the lesion is connected with the bones and periosteum, than when the brain itself is the seat of chronic arteritis or gummatous growths. In a large number of these cases, a renewal of the symptoms in some form or other indicates that the progress of the lesion had been arrested, but that the influence of the virus remains unextinguished. In the most favorable instances, some deterioration of the powers of the mind generally remains. The memory is less retentive than before, judgment is less keen, continuous thought is more difficult, or there is less sensitiveness on matters previously regarded as of the deepest

interest. In other cases, the speech is more or less affected; or the muscles are less firm and vigorous and steady in their action; or the sensory organs have lost some of their sensitiveness.

If any hereditary or other predisposition to mental disorder coexist with the syphilitic lesion, relapses are extremely probable; the influence of the predisposition being considerably augmented by the presence of the specific virus. In spite, however, of these unfavorable considerations connected with cerebral syphilis, it may safely be asserted that disorders of the brain due to this cause are far more amenable to treatment, and admit of a more favorable prognosis, than others of a different origin. Perhaps the most unfavorable class of cases is that in which the symptoms are the result of the combined influences of syphilis and alcohol. In such cases the prospect is almost hopeless. In order the more to impress a patient with the danger attendant upon excesses of this kind, it is well to put the truth before him in the form of an aphorism, viz. that "syphilis can be best preserved by alcohol."

Treatment.—In dealing with cases of cerebral syphilis, we have at our command two principal, and in many respects extremely reliable, remedies. These are mercury and iodide of potassium. In a general way the effects of the former may be considered as more curative, and those of the latter more palliative, as regards the original lesion and its effects. Both remedies often cause rapid disappearance of all the symptoms. The mercury may be given in the form of blue pill, gr. iii, twice a day, or by inunction. As a general rule, considering the gravity of the case, mercury should be given first and its effects closely watched. If these are satisfactory, the remedy should be continued until all symptoms have disappeared. If the improvement is only partial, and the symptoms are obstinate, recourse may be had to the iodide. This must be given in large doses, ʒj—ʒij in the twenty-four hours. At first, however, we must begin with doses of about

seven grains three times a day, combined with two or three grains of carbonate of ammonia, or in an effervescing mixture. A grain or two should be daily added to each dose until the maximum is reached. Another good vehicle is the compound decoction of sarsaparilla, which may be given in quantities of a pint daily. The iodide should be persevered with for many weeks. It may be combined with the mercury; thus gr. $\frac{1}{12}$th of the red iodide may be added to each dose of the iodide of potassium.

The hygienic management of a patient, the subject of cerebral syphilis, is a matter of great importance. His diet should be plain and unstimulating; he should be kept from all sources of excitement, whether mental or bodily, and the strictest rules must be laid down with regard to exercise and the hours of rest. Alcohol must be forbidden, unless for very cogent reasons. Patients suffering from inveterate syphilis are easily affected by small quantities of alcohol. If, however, the patient be much reduced and the appetite flag, one or two glasses of claret may be allowed. A warm bath daily is likely to be beneficial; it promotes tissue-change, and soothes the nervous system. Where there is much excitement, recourse may be had to the bromide of potassium, or to henbane, or to the hypodermic injection of morphia.

Syphilitic Affections of the Spinal Cord occur much more rarely than the corresponding diseases of the brain; but either the bones, or the spinal meninges, or the substance of the cord, may be the seat of various lesions. Exostosis, caries, and necrosis sometimes take place in the bones forming the vertebral canal; the meninges are liable to become thickened and adherent to the surrounding parts, and gummatous growths sometimes form either on the external or internal surface of the membranes, and affect the cord or the nerves proceeding from it. In the cord itself, syphilis occasionally gives rise to a diffuse or a circumscribed inflammatory condition. In the former case,

the substance of the cord is either indurated or softened; much connective tissue is developed, while the elements of the nervous tissue waste and disappear. The circumscribed form is characterised by the development of gummatous tumours. These have been found in the substance of the spinal cord, in the form of yellowish firm nodules as large as a pea or nut. A few well authenticated cases are on record, in which decided syphilitic manifestations in the liver and other viscera coexisted with these growths. In a few cases of syphilitic disease of the spine, the only lesion discoverable after death was hyperæmia of the cord. The symptoms in these latter cases set in early, *i.e.* during the first year, rapidly increase and lead to a fatal result. Sudden paraplegia is the first symptom, with incontinence of urine and fæces. There is neither pain in the spine, nor anæsthesia in the lower limbs.

As a general rule, the symptoms of syphilitic disease of the spinal cord supervene at a late period and in a gradual manner. The patient complains of pain in the spine, either diffused or confined to certain spots. The pain is sometimes particularly intense and violent during the night; in these cases there is probably some bony or meningeal lesion. Sometimes a sensation of constriction around the abdomen is complained of, and there is more or less numbness and stiffness, and feeling of formication, in the lower extremities, which generally feel colder than natural. The degree of anæsthesia varies; and in some cases there is marked hyperæsthesia and the limbs feel hot and tense as if swollen.

These symptoms last for a variable period, and may partially subside and reappear. They often remain stationary for some time. In unfavorable cases complete paralysis is the result. The symptoms vary according to the part of the spine which is affected. If the lesion be in the lower portion of the dorsal region, there will be more or less profound paralysis of the legs and paralysis of the sphincter of the anus, generally associated with paralysis of the detrusor urinæ muscle. If the lesion be

higher up, in the cervical portion of the spinal cord, there will be, in addition to the paraplegia and paralysis of the sphincter ani and bladder, paralysis of the upper extremities and of the thoracic and abdominal muscles, and also of the diaphragm. The patient is quite helpless and bed sores are almost certain to occur. Death from asphyxia is likely to supervene; recovery is rare, but it may occur to a partial extent. The outbreak of the symptoms is slow and gradual, and the course of the disease presents numerous oscillations, as in the case of cerebral syphilis. Convulsions of the paralysed parts are sometimes noticed. Sensibility usually remains intact; reflex irritability is often increased. Syphilitic affections of the spinal cord are usually of long duration, and spinal and cerebral lesions sometimes coexist. Owing to the complicated structure and smallness of the organ, comparatively minute lesions may give rise to many symptoms. If recognised early and treated in an appropriate manner, recovery may take place. Death generally results either from an extension of the mischief along the course of the cord, or from renal disease, secondary to the paralysis of the bladder.

A form of spinal disease, known as locomotor ataxy, is by some considered as frequently due to the influence of the syphilitic poison. The symptoms and morbid anatomy of this disease are now well recognised; the question connected with our present subject refers to the possibility of syphilis playing an active part in the causation of the disease. According to Charcot the specific seat of the lesion in ataxy is a band of white matter situated between the posterior pyramid of the cord and the posterior roots of the nerves, with the adjacent part of the posterior cornua. The condition may be briefly expressed as "lateral fasciculated sclerosis of the posterior columns." The symptoms are: loss of power of co-ordinating the voluntary movements, indicated by a peculiar unsteadiness in their performance, and usually preceded by pain in various parts. The patient first com-

plains of fatigue after slight exertion; of vesical irritability; neuralgic pains in various parts; impotence; diminution of cutaneous and muscular sensibility, and subsequently of loss of power of muscular co-ordination, without paralysis, but evinced by an unsteady staggering gait, and inability to maintain the equilibrium and to stand erect when the eyes are closed. As the case advances, there is often more or less defect of vision, and sometimes paresis of the motor oculi and sixth nerves.

The majority of authors who have written on nervous diseases regard syphilis as a frequent cause of locomotor ataxy. Some, indeed, go so far as to say that fifty per cent. of the cases of the latter affection are essentially due to syphilis. It is confessed, however, that the lesion in locomotor ataxy is very different from those which are ordinarily due to syphilis. "It is a degeneration limited to a system of structure and contrasts with the random distribution of ordinary syphilitic processes." It is, however, remarkable that in one hundred consecutive cases of locomotor ataxy treated by Erb, only twelve presented no history of a chancre or secondary syphilis. M. Fournier believes that syphilis is the cause of tabes in a large majority of cases. He refers to the frequency with which the diseases are found to be associated; to the almost exclusive development of ataxia in the tertiary period; to the frequent similarity or identity of ataxic symptoms with those long known to be characteristic of syphilis; to the beneficial influence often exercised by anti-syphilitic treatment; and, lastly, to the impossibility, in many cases, of finding any other imaginable cause for the production of the disease. It may, on the other hand, be alleged that in ataxia neither diffused nor circumscribed gummatous formations, nor any appearance characteristic of syphilis, are found on post-mortem examination. Besides this, the character of the symptoms is much more distinct and peculiar than in nervous affections admitted to be of syphilitic origin; and some authorities, Leyden amongst the number, deny that there is any ætiological connection between syphilis and

locomotor ataxy! It may be that syphilis, by lowering the tone of the nervous system in general, is in some cases an indirect cause of tabes.

The *treatment* of spinal syphilitic affections is the same with that of cerebral syphilis, but the prognosis is less hopeful. Mercury and iodide of potassium are the main remedies, and the latter must be given in full doses. Warm baths are likely to be serviceable, and the constant and the interrupted current may be applied to the limbs with the view of preventing atrophy. In cases of paralysis of the bladder, the urine must be regularly withdrawn by means of the catheter, the utmost care and cleanliness being observed, in order, as far as possible, to avert an attack of cystitis. In advanced cases bedsores must be looked for and guarded against.

Syphilitic Affections of the Nerves

The cranial and the spinal nerves are sometimes affected in the course of syphilis, most commonly in an indirect manner; that is to say, as a consequence of the development of gummata, or of exostoses, or of thickening of membranes, the adjacent nerve-trunks are compressed and injured. In some cases, the nerves appear to be independently affected. Reference has been already made (see page 216) to cases in which the optic nerves at the base of the brain have been found enlarged and softened, other syphilitic lesions being found at the same time. A condition of interstitial neuritis would therefore appear to be directly due to syphilis, and besides this, gummatous masses are sometimes formed in the nerve-trunks. The cerebral nerves are the most frequent seat of these syphilitic changes. In addition to the optic, the olfactory nerves have been found atrophied and destroyed. Trifacial neuralgia is sometimes met with in syphilis; anæsthesia is less common. The syphilitic affections of the third, fourth, and sixth pairs have been already alluded to. Paralysis of the fifth pair has been noticed in

a case in which the Gasserian ganglion was found atrophied, as a result of pressure from thickening of the dura mater. Facial hemiplegia of syphilitic origin is not very rare; it may be due to exostosis in the neighbourhood of the stylo-mastoid foramen, or to syphilitic deposits at the origin of the nerve. The eighth and ninth pairs do not appear to be liable to be affected in syphilitic disease.

In all these cases the diagnosis must be made by the aid of the patient's history and any coexisting manifestations. The symptoms may be due to a variety of causes. In the case of paralysis of the third pair, syphilis may always be strongly suspected, as it is by far the most common cause of this particular lesion.

With regard to the spinal nerves, these are less frequently affected in the course of syphilis, but they sometimes manifest disorders of motion and sensation in cases where a syphilitic origin may with every probability be suspected. It is likely that sciatica is sometimes due to syphilis, though it is not fair to infer such a causation for every case benefited by mercury or iodide of potassium. Marked nocturnal exacerbation of the pains would support the view that the complaint was of syphilitic origin. In all cases of neuritis, attended with nocturnal exacerbations, inquiry should be made as to any previous infection. In some cases neuritis, probably due to syphilis, has been followed by atrophy and loss of electrical excitability of the muscles. The muscles of the back, neck, arms, and legs may be thus affected. As a matter of course, in all these cases, no positive diagnosis can be made of the cause of the symptoms, but with syphilitic antecedents and the absence of other causes, a specific origin may fairly be assumed.

The *treatment* of syphilitic affections of the nerves is the same with that of cerebral and spinal syphilis.

CHAPTER XXI

MALIGNANT SYPHILIS

Habitual experience teaches us that as a general rule, and under ordinary circumstances, syphilis runs a comparatively mild course, and seldom gives rise to symptoms marked by rapidity of accession or violence of character. In a small proportion of cases, however, the disease exhibits features of a very different type. All the symptoms are severe, many of them occur simultaneously or in very rapid succession, and all traces of division into stages and periods are almost, if not altogether, obliterated. We know from history that the epidemic of syphilis at the end of the fifteenth century was characterised by the severity of the symptoms, as well as by the extent to which it spread, and that it was in consequence wrongly regarded as a new disease. Cases sometimes occur at the present time which serve to remind us of the accounts given of the epidemic in question, which apparently did not retain its pestilential character for more than seven years. Fracastor tells us, in his history of this great epidemic, that some of its most marked features were the phagedænic character of the secondary cutaneous sores; the destruction of parts, as the nose, fauces, and larynx; the size and frequency of the gummatous tumours; the pains in the limbs; the emaciation and the utter prostration of the patient. In the introductory chapter of this volume the circumstances which favoured the aggravation of the virus have been briefly described.

In syphilis, as seen at the present day, it rarely

happens that secondary and tertiary phenomena occur simultaneously in the same patient, or that secondary symptoms reappear after tertiary manifestations have been developed, or that the general course of the disease is otherwise than chronic. In the exceptional cases about to be described the disease runs an acute course, the intervals between the various stages are extremely brief, and certain stages are altogether wanting. Such cases have been described by the term "malignant or galloping syphilis."

In this form of syphilis the cutaneous manifestations are generally very prominent, and are especially characterised by the rapidity with which one form merges into another of a more destructive character, and the general tendency to disintegration. Papules are very readily converted into pustules, and these again speedily form ulcers. The pustules may become dry, but no healing takes place, and the sloughs soon separate, revealing the ulcerated surface beneath. These ulcers are characterised by their sharp, abrupt borders, and their great depth. They are usually circular, and are spread over the whole body. They exhibit no marked serpiginous character, as in ordinary syphilis. True gummata of the skin are seldom seen in malignant syphilis. In consequence of the rapidity with which disintegration sets in, there does not appear to be time for the tumours to develope.

The affections of the mucous membrane appear to follow the same rule as prevails in ordinary syphilis, *i.e.* when the skin-affections are severe the mucous membranes suffer but little, and the reverse. It seldom happens that the skin and the mucous membranes are affected at the same time and with equal severity, but if the skin escapes, severe lesions of the mucous membrane, *e.g.* of the nose, are not uncommon.

Perforation of the cartilaginous septum has been observed to occur six months after infection, and in another case ulceration in the rectum supervened before the end of the first year.

With regard to the affections of internal organs and structures, it is almost always the case that the periosteum and bones are early affected in malignant syphilis. Disease of the bones, especially in the form of nodes, was a marked feature of the European epidemic of the fifteenth century. Renal disease appears to be a common accompaniment of the other symptoms of malignant syphilis. Diseases of the brain are also of frequent occurrence. Reference has already been made in a former part of this work (see p. 26) to cases in which marked ulcerative lesions of the skin (rupia) were rapidly followed by severe cerebral symptoms. Fournier has reported a case in which a cerebral gumma was developed and terminated fatally in a little more than three months after infection. Many other cases are on record in which cerebral symptoms appeared during the first year.

The general course of malignant syphilis, so far as regards the earliest stages, resembles that of the ordinary disease. The first eruption that makes its appearance may present no special feature, and may assume either the roseolous or the papular form. In the majority of cases a pustular eruption, in itself a severe symptom, marks the transition to the tertiary stage, and it is noticed that the pustules do not dry up and heal but become rapidly converted into ulcers. It less frequently happens that the first tertiary symptom is a papular or tubercular eruption which runs its course and subsides, and is followed by ulceration. Those cases in which, so to speak, the whole force of the disease falls rather upon other organs than upon the skin, are not characterised by any special cutaneous manifestations differing from those commonly seen, but the malignancy of the attack is shown by the premature development of the disease in the affected organ. Cases of early cerebral syphilis, already referred to, are instances of this nature.

The interval which elapses between the infection and the appearance of tertiary symptoms is a measure of the malignancy or otherwise of the disease. In cases to which the cha-

racter of malignancy may be fairly attributed, the interval varies within certain limits, but may be assumed to average four months. With regard to the order in which the symptoms follow each other, the same rule is observed as in the ordinary course of the disease, that is to say, the severe affections of internal organs are later in their appearance than those of the skin. It may be laid down as a general rule, that in malignant syphilis the severe cutaneous manifestations appear within six months, and the severe affections of internal organs within a year after infection.

Another characteristic of malignant syphilis is the proneness which the manifestations exhibit towards recurrence. These recurrences may be noticed during several years, even in tolerably favorable cases. They at last cease, however, if proper treatment of all kinds be adopted, but in some cases the attacks leave behind them irreparable lesions of important organs. The prognosis is therefore mostly unfavorable, and especially if the patient be in enfeebled health and poor circumstances. On the other hand, under favorable conditions, the disease may run its course and subside as completely as the milder forms.

With regard to the causation of malignant syphilis, *i.e.* the reason why in some cases the disease should be so much more severe than in others, it is difficult to make any very positive statements. In the first place examples of this type of the disease are rarely seen at the present day, and secondly we require to know more of the cause of syphilis in general before venturing upon an explanation of its varieties. It might be supposed that patients whose constitutions have been enfeebled by excesses, by attacks of previous disease, and other causes which produce cachexia, would be liable to exhibit severe symptoms as a result of syphilitic infection. Other predisposing causes which have been suggested are the scrofulous habit, pregnancy, prolonged lactation, old age, and chronic alcoholic poisoning. The cases that have been published,

however, fail to prove that there is any definite causal connection between these conditions and malignant syphilis. But few of the cases occur in inveterate drinkers, and, considering how widespread is the abuse of alcohol, and how often those who are the victims of this vice contract syphilis, we ought to see more examples of the malignant type if alcohol were a potent factor in its production. Abuse of alcohol always influences the course of syphilis in an unfavorable manner, but it by no means necessarily gives rise to the malignant type of the disease. The cases likewise show that the character of the disease is slightly, if at all, influenced by the age of the patients. It would, however, appear that iritis of a severe form is rather prone to occur in patients past middle life.

There is also no evidence to prove that cachexia of any kind aids in the production of the symptoms of malignant syphilis. In the recorded cases many of the patients were in robust or very fair health. Marked cachexia sets in, however, during the progress of the disease, and especially when prolonged or extensive suppuration, or diseases of the bones are present. In a few cases the patients were the subjects of pulmonary consumption.

It has been supposed that the violence of the symptoms is due to some specific peculiarity of the syphilitic virus, but this is only an assumption, which is, moreover, rendered improbable by certain facts, and especially by cases in which men suffering from malignant forms of syphilis have infected their wives, in whom the disease has exhibited only its ordinary features. It is well known that cases of syphilis occurring in seaport towns, and in cold damp weather, often assume a certain degree of acuteness, but there is nothing extraordinary in such consequences. Syphilis requires not only medicinal but hygienic treatment, and if the latter be unattended to, the action of the poison will be aided in proportion to the neglect.

With regard to the *treatment* of malignant syphilis, the general indications and the remedies will be discussed in a

succeeding chapter. It is here sufficient to say that mercury is generally badly borne and must always be administered with great care in such cases. Iodide of potassium is far more efficacious; it should be given in full doses up to 120 grains *per diem*, with sarsaparilla. Tonics, as quinine and iron, may be given at the same time. Good food, fresh air, cleanliness, warm or tepid baths, and stimulants in strict moderation, are valuable adjuncts.

CHAPTER XXII

SYPHILITIC RE-INFECTION

As a general rule, syphilis occurs but once in the same individual, that is to say, one attack protects the vast majority of patients from subsequent contamination. In this respect syphilis resembles smallpox, scarlatina, measles, and typhus fever. But just as is observed with regard to these febrile affections, so also in syphilis—one attack does not always confer immunity if the patient be exposed to fresh contagion. Many cases have been reported which leave no doubt as to the possibility of the recurrence of an indurated chancre, with subsequent evolution of the whole series of constitutional symptoms. I have met with two cases in which re-infection occurred at intervals of three and five years respectively. Both patients presented for a second time indurated sores, followed by roseola; and both had been subjected to a nine months' course of mercury for the first attacks. A remarkable case of this kind is recorded by Zeissl.* A man contracted syphilis in 1848. Eighteen months afterwards he was found to have frontal exostoses, the *corona Veneris*, and other signs of constitutional syphilis. He underwent a prolonged course of mercurial inunction, followed by Zittmann's decoction and iodide of potassium, and was discharged "quite cured" six months after admission into hospital. More than five years afterwards (having remained perfectly well in the interval) he presented himself with an excoriation on the left side of the middle line of the prepuce, and stated that it was the result of a

* 'Lehrbuch der Syphilis,' 1882, p. 325.

suspicious connection. The patient's antecedents being well known, no bad consequences were expected. After some time, however, the patient reappeared, the excoriated spot was found to be converted into a well-marked induration, and the glands in the left groin were hard and prominent. The man exhibited no sign of the previous syphilitic infection. Seven weeks after exposure to contagion, a pale brown eruption of roseolous patches appeared on the sides of the chest. Mercurial inunction was again resorted to, the induration gradually diminished and the glands in the groin became softer and less prominent. This and many other similar cases prove that the so-called syphilitic diathesis may become extinguished, and that the disease may be reproduced in the same individual. The possibility of a second attack of syphilis has long been recognised by military surgeons.

Eleven cases of syphilitic re-infection have been recorded by the author's late colleague Mr Gascoyen.* In these cases, the interval between the two infections varied from one year and nine months to more than nine years, and the severity of the second attacks bore no relation whatever to that of the first. In four cases, the re-infection was in the form of an indurated chancre only; but in six, undoubted constitutional symptoms appeared. In six of Mr Gascoyen's cases the patients were, at the time of re-infection, suffering from tertiary syphilis, and this fact supports the theory that the advanced symptoms must be sequelæ rather than manifestations of a still existing disease. Diday has recorded twenty cases of syphilitic re-infection observed by him during six years, and he mentions one case in which four re-infections occurred. As a general rule, when the interval was short the symptoms of the second infection were of a mild character. On the other hand, when the interval was considerable the symptoms of the second attack were more severe. Sloughing of the sore has sometimes been noticed in a second attack of syphilis.

* 'Med.-Chir. Trans.,' vol. lviii.

These cases have an important bearing on the question of the curability of syphilis. If a person contracts an indurated chancre, and this is followed by enlargement of the inguinal glands and further constitutional symptoms, it may fairly be concluded that he was free from syphilis at the time of exposure to contagion, notwithstanding any previous history of syphilitic infection. Mercury had been given in all of Mr Gascoyen's cases, the re-infection which ensued is confirmatory of the opinion of those who regard mercury as an antidote to the syphilitic virus.

In all cases of supposed syphilitic re-infection it is necessary to guard against the error of mistaking a relapsing induration for a primary lesion. There are other sources of error. A syphilitic subject, with no obvious manifestations of the disease, may contract a soft sore, and without due care, some relapsing skin-affection might be regarded as evidence of the consequences of a second infection. To prove re-infection there must be (1) unequivocal evidence of a first attack (*i.e.* of an indurated sore followed by glandular enlargement and an affection of the skin or throat), and (2) an existing second attack, with symptoms of a like character.

CHAPTER XXIII

THE GENERAL DIAGNOSIS AND PROGNOSIS OF SYPHILIS

THERE is in many cases no difficulty whatever in recognising the manifestations of syphilis; while in others it may be for some time impossible to come to a positive decision. With the exception of gummatous growths, the lesions of syphilis present no peculiar histological characters; but the primary induration, the glandular enlargement, and the subsequent series of changes in the skin and mucous membranes constitute an aggregate of symptoms absolutely pathognomonic of the disease. The diagnostic signs of these various affections have been already described (see pages 82, 87, 95, &c.). Other symptoms, such as the papular eruptions, and especially those on the palms of the hands, symmetrical ulcerations of the tonsils, iritis, nodes on the tibiæ and on the cranial bones, serpiginous ulcers and ulceration due to superficial gummata, are all more or less characteristic; and the presence of any one or more of these symptoms is sufficient to excite suspicions of syphilis. There are, however, many other symptoms produced by this disease, but by no means peculiar to it, and when these alone are present the diagnosis becomes difficult, especially if, as often happens, the patient has failed to notice any previous symptoms, or wilfully conceals their occurrence.

In the first period of syphilis, the induration and the glandular enlargement are seldom wanting, although the former may be very slight and therefore difficult of detection. A very guarded opinion should always be given when a sore on the genital organs, the result of a

suspicious connection, is *first* presented for examination. It may be either a soft sore or one in which induration will subsequently become developed, and time alone will enable the practitioner to decide as to the true nature of the affection. If induration be already present, the diagnosis is clear; but a considerable interval may elapse before this symptom shows itself (see pages 77, *et seq.*). In women (see p. 82) the layer of induration at the base of an ulcer on the vaginal walls is sometimes no thicker than parchment, and is therefore easily overlooked. The existence of glandular enlargement will, however, establish the diagnosis.

Errors in diagnosis are apt to be committed at the beginning of the secondary stage, and without a due knowledge of the history and a careful examination of the patient, the febrile symptoms and the other evidences of constitutional disturbance may easily be attributed to other causes (see pp. 92 and 97). The symptoms may be mistaken for those of rheumatism, measles, intermittent or other fevers; but even if no other lesions be present, the enlargement of the cervical and inguinal glands will always be discoverable in syphilitic cases. Elevation of temperature beyond 102° is rarely noticed.

The distinguishing characteristics of the secondary symptoms have been given in previous pages. The most important points to be noticed are their dissemination over a large area; their coppery-red colour; the frequent coexistence of several forms; the absence of itching and their more or less symmetrical development. Glandular enlargement is never absent at this period, and condylomata are not unfrequent.

When several years have elapsed since infection took place, it may be expected that the symptoms will assume a less definite character. The glandular enlargement will probably have subsided and any cutaneous eruption will be more irregular in form and distribution. A general cachectic condition may be a very prominent feature, and with this may be associated pains resembling

those of rheumatism and attended with nocturnal exacerbations, neuralgia, remittent febrile attacks, paralysis of cerebral or spinal nerves, &c.

The tertiary cutaneous manifestations are less characteristic than those of the secondary stage ; they are generally limited to a few points, they are slowly developed and often terminate in ulcers which leave behind them well-marked cicatrices. These white, depressed scars, with brownish-red patches, as often seen on the lower extremities, are strongly suggestive of syphilis. Secondary and tertiary affections of the mucous membranes accessible to observation, often leave characteristic changes behind them. Thus, perforation or destruction of the soft palate, flattening of the bridge of the nose, cicatrices in the tongue or in the pharynx, psoriasis of the tongue or the condition of the organ called "keratosis," are all more or less decided indications of syphilis.

The diagnosis of the visceral lesions is often attended with considerable difficulty, and especially in cases in which there are no active manifestations of syphilis accessible to observation. When there is any reason to suspect syphilis, those parts of the body in which the earlier symptoms appear must be carefully examined ; and it frequently happens that glandular enlargement and cicatrices in the skin or mucous membrane afford a clue to the real nature of the case. The state of the eyes and of those bones which are covered only by skin will often assist the diagnosis. In the case of women, a history of several abortions should always arouse a suspicion of syphilis. In all cases of doubtful origin, but in which syphilis is suspected, iodide of potassium, or even mercury, should be cautiously tried.

Prognosis.—The question of prognosis has been already incidentally referred to in various parts of this volume ; the general aspects of the subject now remain to be considered. It may be briefly stated that, at the outset, no two cases admit of a precisely similar prognosis, the fact

being that in some patients the symptoms more or less rapidly subside, and the poison to all appearances is completely removed from the system; while in others the disease can scarcely be said ever to come to an end. The interval between these extremes is occupied by cases presenting innumerable differences in the severity and number of the symptoms, and in the periods of time occupied by the various manifestations.

With regard to the *primary induration*, it is very questionable whether any relation exists between its *amount*, and the severity or prolongation of the subsequent symptoms, and the same remark holds good with regard to the amount of the induration and swelling of the neighbouring glands. A gradual and progressive diminution in the size of the glands is a favorable symptom. It has been supposed that the *locality* of the primary induration influences the course of the disease, and that severe symptoms are likely to follow infection on the fingers. It cannot, however, be regarded as certain that any differences of this kind really exist; the severity of the symptoms in these cases may be due to the fact that the lesion was overlooked or disregarded for some time. As a matter of course, the occurrence of phagedæna renders the prognosis decidedly unfavorable as regards immediate consequences and the future results of the case.

The *secondary* manifestations are of more assistance in the prognosis. If these be of a mild character, *e.g.* if the eruption be roseolous, and not papular or pustular, the disease, in all probability, will be of a mild type. On the other hand, the early appearance of a papular eruption indicates a severe form of syphilis; and the development of pustules, followed by severe ulceration, renders the prognosis very unfavorable. Eruptions covered with rupial crusts are the most serious of all. Their liability to be followed by cerebral and spinal disorders has been already referred to (see pages 26, 69, and 216).

The development of gummatous growths likewise renders the prognosis grave. Considerable destruction of tissue,

and the probability that similar formations will take place in internal organs, constitute the principal elements of danger. When this gummatous or tertiary stage has been reached, much will depend upon the organ affected and upon the general condition of the patient. If, for example, the lesions are superficial, the prognosis will be more favorable than if the symptoms indicate an affection of the nervous system, or of the liver, or other important organs. With regard to cerebral syphilis, the prospects of improvement and recovery under suitable treatment are, *cæteris paribus*, greater than when the symptoms are due to other causes. The coexistence of severe visceral disease with other manifestations of tertiary syphilis is a sign of grave import. A state of cachexia dependent upon affections of the skin or bones is less serious than a similar condition due to disease of some internal organ.

The general condition and the constitution of the patient are important elements in forming a prognosis. If a healthy young adult contracts syphilis, and is forthwith subjected to proper treatment, the probability is that complete recovery will take place. If the patient at the time of infection was in a more or less unhealthy condition from any cause, the prognosis becomes proportionately unfavorable. Scrofulous subjects are especially prone to the pustular forms of eruption, and to ulcerative affections of the skin, and when tuberculous patients become syphilitic the lesions are almost always severe, the two diseases mutually influencing each other in an unfavorable manner. When syphilis is complicated by Bright's disease its course is usually rapid and severe.

The *habits* of the patient, both before and after infection, materially influence the course of the disease, and have therefore an important bearing upon the question of prognosis. The elimination of the poison is promoted by everything which tends to improve the general health, and is retarded by all habits of an opposite character. Of these latter, drunkenness is certainly the most potent for evil. The dogma that "syphilis is best preserved by

alcohol" is one upon which it is impossible to lay too much stress. All other forms of dissipation are hurtful in a degree corresponding to their extent and effect upon the general health, and all other unhealthy conditions, *e.g.* want of cleanliness, insufficient nourishment, exposure to cold and damp, &c., have a more or less decided effect in increasing the severity of syphilis.

With regard to *age* as influencing the prognosis, it has been mentioned in a previous page that, as a general rule, syphilis contracted after the age of forty is a much more serious affection than in younger subjects. Patients in middle life seldom get rid of the disease, and with advancing years the probability of visceral complications and of other unfavorable conditions becomes increased. The prognosis in cases of the hereditary disease will be found in a subsequent chapter.

There is much difference of opinion with regard to the question of *sex* as influencing the intensity of the disease. It is generally stated that women, as a rule, suffer more severely than men, but my own experience leads me to an opposite conclusion. It is no doubt true that some of the most severe manifestations of syphilis are seen in women, viz. in prostitutes of the lowest stamp, but in these cases, the severity of the disease is due to the coexistence of several unfavorable conditions. If, however, we compare the results of syphilis upon men and women belonging to the well-to-do classes, and placed, as nearly as possible, under similar conditions, it will be found that women generally are far less severely affected than men, and that they recover more completely and in a shorter time. Probably this difference is to be attributed, in part at least, to the difference in habits before and after infection; but I think that the process of menstruation plays a still more important part in diminishing the severity of the disease, by its depurative action on the blood and other fluids of the body. For remarks on the prognosis in cases of malignant syphilis, the reader is referred to the chapter on that subject.

There is one other point to be considered, viz. the question of treatment. As a matter of course, the prognosis, *cæteris paribus,* is much more favorable in patients who are subjected to early and appropriate treatment, and attend implicitly to all instructions, than in patients under opposite conditions. The prognosis will also be guided, to some extent, by the manner in which the remedies (and especially mercury) act upon the system generally and upon the manifestations of the disease. If little effect be produced, and if the patient's general health seems to become impaired during the course of treatment, and especially if salivation is rapidly caused, the prognosis will be unfavorable. On the other hand, when the treatment is followed by decided improvement of all symptoms, and tolerance of the remedies is observed, the prognosis becomes hopeful and the probabilities of an ultimate cure are greatly increased. The question as to the possibility of syphilis being cured has been already referred to in the chapter on Syphilitic Reinfection.

CHAPTER XXIV

HEREDITARY SYPHILIS

The fact that syphilis is transmissible from parent to offspring was recognised by writers of the sixteenth century. Paracelsus, in a book published in 1558, wrote "Morbus gallicus et hæreditario jure ac contagii consortio communicari posse." Another writer, Augier Ferrier, in 1553, stated that hereditary syphilis had three possible sources of origin, (1) the semen of a syphilitic father; (2) the impregnated ovule of a syphilitic mother; and (3) infection of the fœtus by the blood of the mother who had acquired syphilis after conception. This view was adopted, either partially or entirely, by several authorities in the seventeenth century. Hunter denied the hereditary transmissibility of syphilis from a father, the subject of the constitutional disease. This opinion was in accordance with his theory that the secondary manifestations of syphilis are not infectious. At the beginning of the present century, Swediaur contended that syphilis may be inherited, and that in almost every case of the kind the disease is transmitted from the father and not from the mother. Cullerier and others, on the contrary, asserted that syphilis is transmitted to the fœtus through the mother alone. Ricord at first adopted Hunter's view, but afterwards allowed that hereditary transmission might occur, but only as an exception to the general rule. It is now, however, universally admitted that syphilis in the child may be derived from either parent; and that the general result is the same whether the father or the mother is affected.

The stage which the disease has attained in one or other parent is a point of much practical importance. If the father is suffering from a primary sore and has infected his wife, it is doubtful whether his disease will exert any *immediate* influence upon the ovule which he impregnates, but which will become syphilitic owing to the infection of the mother. If, however, the husband is the subject of decided constitutional syphilis, but has no sores from which direct infection of his wife can take place, the syphilitic semen will nevertheless convey the disease to the ovule. The question as to whether in such a case the mother can remain free from the disease, or must necessarily be infected by the fœtus, will be subsequently discussed.

Another very important question refers to those cases in which the father, having suffered from decided constitutional syphilis, was nevertheless free from any signs thereof at the time when impregnation took place. It would appear that under these circumstances the ovum may either escape or become infected, and that any opinion in the way of prognosis must be based only on probability. It is almost impossible to assert that a person, who has once had syphilis, has become absolutely free from it; even if the most careful examination fails to detect any existing indications of its presence. Cases are often seen in which the patient for shorter or longer intervals, is apparently free from the disease, which, however, manifests its existence later on in an unmistakable manner. Such a man may during these intervals beget healthy children, and the mother may remain apparently unaffected. The more recent the disease in the father, even though obvious manifestations be wanting, the more likely are the child and mother to become infected.

In those cases in which the wife of a syphilitic husband gives birth to diseased children or repeatedly miscarries, it has been often observed that the woman's health suffers in a marked though indefinite manner; but that for some time she presents no decided manifestations of

syphilis. These, however, make their appearance at a later stage, and are to be attributed to the repeated reception of the syphilitic virus through the fœtus during the successive pregnancies. In another class of cases the symptoms appear in the woman during her first pregnancy. The general rule therefore is that the ovum, rendered syphilitic by the semen of the father, transmits the disease to the mother; that is to say, the father's disease is communicated not only to the ovum but to the mother as well, and this without any primary lesion necessarily manifesting itself on the person of the latter. The constitutional symptoms are those which first make their appearance.

A French obstetrician, Gardien, in 1824, was the first to call attention to the above circumstances. His statements were afterwards confirmed by Ricord, who asserted that when a man, the subject of secondary syphilis, infects his wife, he does so by causing her to become pregnant.

The subject, however, was brought more prominently before the notice of the profession by Abraham Colles in his work entitled 'Practical Observations on the Venereal Disease,' and published in 1837. His preliminary remarks are as follows:—"I must state a fact which, though I am unable to explain it, has been forced on my observation by more than five or six instances; namely, that a newly married man, who is himself free from every appearance of syphilis and every other disease, shall yet infect his wife in such a manner that secondary symptoms shall appear in her a few months after marriage, and these not preceded by any primary symptoms, or by any discharge whatever from the genitals. And though among these secondary symptoms, some raised ulcers shall fix upon the external pudenda of the wife, yet the husband shall very rarely suffer in any manner from these. The husband, when questioned, will admit that at some period within nine months antecedent to his marriage, he had contracted a venereal disease; that he had undergone mercurial treatment by which all his symptoms were

removed, and that he had been declared by his surgeon to have been cured. . . . In the ordinary time his wife becomes pregnant, and carries the child until the seventh or eight month, when abortion takes place. . . . The same fatality attends in the second, third, and perhaps fourth pregnancy. . . . Sometimes the child is produced alive, but in such a weakly and emaciated state that it does not survive more than a few hours ; and such often bear unequivocal marks of the venereal disease."*

Colles' observations were followed some years later by those of Bouchut and Hutchinson, and during the last thirty or forty years, many cases illustrating Colles' remarks have been placed on record. It sometimes happens that the woman exhibits secondary symptoms, such as condylomata, roseola, ulcers in the throat, falling off of the hair, glandular induration, &c. In other cases the symptoms are those of the tertiary period. When the symptoms belong to the former category they usually come on at an earlier date, perhaps in the third or fourth month of the pregnancy, and in these cases it is generally noticed that the father's infection is of a comparatively recent date. As stated above, the symptoms in the mother do not always appear during the first pregnancy or immediately after it. She may remain apparently healthy, or the symptoms may be of a very slight, ill-defined character, such as more or less anæmia, loss of appetite, transient neuralgia, debility, leucorrhœa, gradual loss of hair, &c. In another group of cases, after subsequent pregnancies decided symptoms, such as condylomata, psoriasis of the tongue and hands, throat-affections, &c., make their appearance, and relief from these is to be obtained from specific treatment alone. This mode of acquiring syphilis has been designated by French writers "choc en retour."

Further proof of the infection of the mother through a syphilitic fœtus is afforded by the fact that, even if obvious manifestations of the disease be absent, she is

* Colles' works, New Syd. Soc. edition, p. 252, *et seq.*

very rarely infected by the infant she suckles, whereas such a child would, in all probability, communicate the disease to a healthy wet-nurse. This fact forms the basis of the generalisation which has been termed "Colles' law." This author sums up his experience as follows:—"The following fact appears to me very deserving of notice: I have never seen or heard of a single instance in which a syphilitic infant (although its mouth be ulcerated) suckled by its own mother had produced ulceration of her breasts, whereas very few instances have occurred where a syphilitic infant had not infected a strange, hired wet-nurse, and who had been previously in good health."* There is also the additional and very important fact that the mother in this case may present no obvious venereal symptoms.

Colles' law has been confirmed by the experiments in which attempts have been made to inoculate syphilis upon the mothers of syphilitic children. In no case were these successful.

It must, however, be admitted that many reliable observers refuse to accept Colles' law as being universally applicable, and they answer with a decided affirmative the question, Can a healthy mother bear a syphilitic child? Kassowitz's statistics are very important in this respect.† He states that in the Vienna Asylum for Foundlings, out of 400 children with hereditary syphilis 166 had healthy mothers, in 122 cases the mothers were syphilitic, and in the remainder of the cases the condition of the mothers was unknown. He also mentions seventy-six other cases, in forty-three of which the mothers were healthy, in twenty-three both parents were syphilitic, and in ten the mothers alone were diseased.

Those who deny the possibility of the mother's becoming infected through the fœtus, believe that the cases adduced in support of Colles' law have been imperfectly observed, and are therefore not to be depended upon. Dr. Bum-

* Colles, l. c., p. 271.

† 'Die Vererbung der Syphilis,' Vienna, 1876, p. 23, *et seq.*

stead* thinks that either the initial lesion in the father has been overlooked, or else that of the mother has escaped notice, by reason of its trifling character or its inaccessible position. He also lays stress upon the fact that in many cases the disease is fully developed in the mother before the birth of the child, who may manifest no symptoms until several weeks after birth. He entirely repudiates the view that at each successive pregnancy a woman receives fresh supplies of the poison, which thus increases in amount and intensity.

A case has been recently reported† in which a woman gave birth to two syphilitic children in succession, and was infected by the second child during suckling. "A man, aged thirty, contracted syphilis eleven years ago, but has remained free from symptoms during the past nine years. His marriage, which took place three years ago, was followed by the birth of a syphilitic child at the end of the first year. A second child, born at the end of the third year, exhibited when a fortnight old a roseolous eruption and ulcers about the mouth. The mother suckled the child, with the result that a fissure on her left nipple became converted into a well-marked hard chancre, and this was followed by a copious eruption of roseola." This case is cited in proof of the assertion that a woman may give birth to several syphilitic children without being necessarily infected. Lancereaux says that he has twice observed congenital syphilis in children whose mothers had never presented any symptom. Cases of a different character and tending to support this view have also been recorded. It is stated that women who have borne syphilitic children, have given birth to perfectly healthy infants after marriage with a second and healthy husband. Such instances, however, do not really contradict "Colles' law." It is often seen that where the father is syphilitic, several children may show signs of the inherited disease

* 'Venereal Diseases,' p. 744.

† Guibout, 'Nouvelles Leçons Cliniques sur les Maladies de la Peau,' Paris, 1879. Quoted by Zeissl, l. c., p. 738.

and be followed by others apparently free from any trace of it.

The question as to the complete validity of Colles' law is still *sub judice*. Some authorities state that the mother of a child, the subject of hereditary syphilis derived from the father, cannot remain healthy; others say that she is always unaffected, while a third class aver that, as a general rule, she remains healthy but in exceptional cases becomes affected. Some again lay stress upon the condition of the mother's nipples, and assert that if these are cracked, she will become infected by suckling her infant, but that if they are sound she will escape. If it be true that every mother of a syphilitic infant is saturated with syphilis and cannot be further infected, it is not easy to explain why succeeding pregnancies should be followed by manifestations of syphilis.

When the disease in the father is in the tertiary stage it is not, in *the majority of cases*, capable of hereditary transmission. In this case, both mother and child escape notwithstanding that the father may exhibit gummata, necrosis of bone and other evidences of syphilis. Many instances of this character have been placed on record. I have never seen a case of hereditary transmission from a father presenting these symptoms. It is, however, impossible to assert *positively* in any given case, that the disease has reached such a stage that hereditary transmission need no longer be feared.

Syphilis in the child may be derived from the mother, the father being perfectly healthy. If the affection is recent in the mother, the child will almost certainly suffer. Abortions are very apt to occur; in other cases there are several children with evidences of syphilis, but in the course of time the woman may give birth to a child apparently in perfect health. Sterility is sometimes observed in women the subjects of inveterate syphilis. When the tertiary stage has been reached and the woman becomes pregnant, the probabilities are the same as when the disease is in the same stage on the father's side.

With regard to the manifestations in the child, there are no characteristics whereby infection from the father can be distinguished from the receipt of the disease through the mother. It would moreover appear that abortions are equally common in both cases. When both parents are syphilitic the prognosis is highly unfavorable, much more so than when only one is affected. It is improbable that the disease will be extinguished in both parents; and even if one becomes free from it, the other remains to infect any succeeding progeny.

The shorter the interval between the infection of one or both parents and impregnation, the greater the liability of the fœtus to become affected. If, for example, either parent be the subject of syphilitic roseola or an early papular eruption, transmission of the disease is practically certain; whether the same can be affirmed of a case in which the father at the time of impregnation had not developed any secondary manifestations, has not yet been determined, but it is highly improbable that the child would escape. Transmission may certainly take place when all symptoms are latent in the parents; such latency being either a spontaneous phenomenon or the result of treatment. When a long period has transpired since the infection of the parents, no definite prediction can be made; as a general rule, infection within three years renders transmission certain; after that time much depends upon the health of the parents, and upon whether a *proper course of treatment* has been adopted, but even under apparently favourable circumstances, transmission may take place ten years after infection; such cases, however, are decidedly exceptional.

Should impregnation take place when the disease is very marked and recent in one or both parents, early abortion is the most probable result. Succeeding pregnancies will probably terminate in a similar manner; after a while perhaps, a still-born seven months' child, presenting many symptoms of inherited syphilis, will come into the world, and after a due interval a child may be born alive, but

dies soon after birth. Should the woman again become pregnant, she may give birth to a child apparently healthy but exhibiting syphilitic symptoms when a few weeks old. Such results indicate the gradual extinction of the disease, the eventual completion of the process being demonstrated by the fact that the woman gives birth to a perfectly healthy infant. This result is almost always attainable if systematic treatment be adopted. If a woman who has given birth to several syphilitic children, be subjected to a proper course of mercury, the good results of the treatment will certainly be exhibited in any succeeding pregnancies, the children being almost free from disease, or in many cases appearing perfectly healthy. If, however, the treatment be imperfect, there may be some improvement in the first child born afterwards, but the disease will probably reappear in any succeeding children.

The next question refers to the case of a mother, healthy at the time of impregnation, but who subsequently contracts syphilis during pregnancy. Will the disease be communicated to the fœtus through the placental circulation? Some authorities are of opinion that such infection does not take place if the mother becomes affected during the former half of her pregnancy. Others, on the contrary, think that syphilis, acquired by the mother after the fourth or fifth month, is not transmitted to the offspring; others again, as will be seen presently, utterly deny the possibility of syphilis being transmitted in this manner. The probability is that the child is liable to become infected, if syphilis be contracted by the mother at any time before the last month of pregnancy. The favorable influence of mercurial treatment is well seen in cases of this nature.

On this question, viz. as to whether syphilis can be conveyed through the utero-placental circulation, Dr. Bumstead* again comes forward as an opponent of the views generally held. He asserts that syphilis of the mother, acquired during pregnancy, cannot be conveyed

* L. c. p. 742.

to the fœtus through the utero-placental circulation ; and in this opinion he is supported by Bärensprung, Kassowitz, and Pick. He takes it for granted, however, that the essential vehicles of the syphilitic poison are "cells or albuminoid molecules derived from an active syphilitic lesion," and that "after fecundation the embryo is not supplied with cells of any kind, but simply with serum. There is, therefore, after the occurrence of conception, no possibility of the transmission of syphilis."

With regard, however, to the interchange of materials through the utero-placental circulation, it is true that there is no real continuity between the two sets of vessels ; the tufts of the fœtal vessels are separated from the blood of the mother by a basement membrane and a layer of cells, and the non-existence of any communication is further shown by the different size of the blood-corpuscles in the fœtus and in the parent. It is, however, going too far to assume that albuminoid molecules (supposing that the vehicles of the syphilitic poison are of this nature) cannot pass with the liquor sanguinis from the one system into the other. There is no doubt that the blood of the mother may become impregnated with substances, or impressed with attributes originally belonging to the male parent, and may impart these to the products of subsequent conceptions by a different father. Unmistakable instances of this nature are often seen in animals, and they furnish a strong support for the theories under discussion, viz. that syphilis may be communicated to the mother from the fœtus, and *vice versâ*, through the medium of the utero-placental circulation.

It would seem that the date at which the mother acquires syphilis during her pregnancy influences the course of the phenomena in the offspring. If the infection take place during the later months of pregnancy the symptoms will in all probability appear during the first few weeks of the child's existence, and will be of a severe character. If the disease be acquired by the mother during the second or third month, abortion is likely to

occur; but if the child is carried to the full term, the constitutional manifestations may be expected to be less severe and later in their appearance than in the former case.

Latency of the Symptoms of Hereditary Syphilis.—Reference has been already made to the fact that the children of syphilitic parents often show no signs of the inherited disease at birth; its presence, however, is sooner or later manifested by unmistakable symptoms. The interval is sometimes considerable, and this characteristic of latency constitutes one of the differences which exist between the acquired and the hereditary forms of the disease. It may be laid down as a general rule that the period at which hereditary symptoms manifest themselves depends upon the condition of the disease in the parents. The more recent the infection and the more marked the evidences thereof, the earlier and the more decided will be the manifestations in the progeny. Abortions, miscarriages, death of the fœtus, a child born with marked symptoms, another with mild symptoms, are, so to speak, measures of the intensity or otherwise of the parent's disease. If the disease in the father or mother be almost extinct at the time of impregnation, the child, when born, may be to all appearances perfectly healthy, and may either remain so or else develope symptoms of syphilis some months or years afterwards.

In a large majority of cases, the symptoms of hereditary syphilis appear either at birth or some time during the first three months. It is only in exceptional cases that the outbreak of the symptoms is deferred until the fifth or sixth month. Diday's statistics of 158 cases show that in 146 the symptoms appeared during the first three months, and that in 86 they appeared before the end of the first month. In 124 cases closely observed by Kassowitz, the symptoms in every instance were developed during the first three months—in 66 in the first month; in 40 in the second; in 18 in the third month.

When the manifestations of syphilis are delayed beyond the third month, it may generally be anticipated that the complaint will assume a comparatively mild form and will yield readily to treatment. Many cases have been placed on record showing that the outbreak of the disease may be deferred till a much later period. Ricord described a case in which the patient was seventeen years old when the first symptoms showed themselves. He has also mentioned cases in which forty (!) years passed before the symptoms appeared.* There must, however, always be considerable doubt about cases of this kind. In a case recorded by Bouchut, the patient, a girl, had reached ten years when symptoms showed themselves in the form of destructive ulceration of the nasal septum and perforation of the palate. In many cases of alleged late outbreak, it is very probable that the signs which existed in early life were overlooked or misinterpreted; and considering the many channels by which the poison of syphilis may gain access to the system, it is possible that in a considerable proportion of the cases, the symptoms were really those of the *acquired* form of the disease. That, however, the symptoms may occasionally be latent for several years has been placed beyond dispute. Zeissl noticed a case in which the patient was fourteen years of age when the symptoms appeared. He regards it as possible that "the children of a father, the subject of latent syphilis, may appear quite healthy at birth and may remain so for some years, when gradually gummatous infiltration becomes developed in the skin of various parts (syphilitic lupus) and is soon followed by ulcerative destruction of the soft palate and nasal mucous membrane (ozæna, &c.), diseases of the bones, symptoms which in former times were often regarded *as manifestations of scrofula.* Zeissl separates the hereditary syphilis, which appears in a secondary form soon after birth, from that which supervenes later on and presents tertiary manifestations; the former he describes

* Quoted by Diday, "Infantile Syphilis," 'New Syd. Soc. Trans.,' p. 115.

as congenital syphilis; the later, as latent hereditary syphilis. The statistics of Diday and Kassowitz have shown that the latency of the symptoms is an exceedingly rare phenomenon. Diday doubts the possibility of syphilis remaining latent during many years, and bursting forth only at an adult age. He adds, "From the moment that the idea of hereditary syphilis remaining latent till the age of twenty or thirty was adopted, this dogma might evidently serve as a cloak for all delinquents. Sons would then exculpate themselves without ceremony at the expense of their fathers. . . . The social and moral consequences of such a doctrine are evident enough.*

Symptoms of Hereditary Syphilis

When the fœtus dies *in utero* and is prematurely expelled, it is found to be more or less decomposed, and often to such an extent that nothing peculiar can be distinguished. The epidermis is softened, raised into bullæ, and detached over large portions of the surface. If the child is carried to the full term, and dies before delivery, the body will be found much emaciated, but traces of syphilis on the surface may be either present or absent. But even if cutaneous symptoms be absent, certain changes in the epiphyses of the long bones, and in the cartilages of the ribs, are invariably present. These consist of thickening of the periosteum, the formation of osteophytes, and discolouration and softening of the spongy tissue of the bones in the neighbourhood of the epiphyses. Changes are also frequently found in some of the internal organs, especially the liver and lungs. In the former diffuse gummatous infiltration is generally seen, in the latter, white hepatization is the most characteristic appearance.

When a child the subject of hereditary syphilis is born alive, the appearances vary in different cases. In a large

* Diday on "Infantile Syphilis," 'New Syd. Soc. Trans.,' pp. 114, 115.

proportion of instances, the child appears healthy and vigorous; in another class, the children are puny and delicate, but no decided symptoms appear until several days or weeks have elapsed; while in a third and less numerous class, the children are born with evidences of the disease upon them. Children belonging to this last class of cases, and those in whom the disease makes its appearance soon after birth, are generally the progeny of parents in whom the original disease is of recent date.

The most obvious symptoms in hereditary syphilis are connected with affections of the skin and mucous membranes. But before any eruption appears, there are in many cases certain peculiar symptoms by which the hereditary taint may be recognised. The children are usually small and undeveloped and have an aged look; the skin is loose and wrinkled; it has no healthy transparency, but is dull and of a yellowish or light coffee-coloured tint, which becomes more decided as time goes on. The discolouration is sometimes uniform, but in most cases the tint is especially marked in certain spots, viz. the forehead, eyebrows, nose and chin; the depressions on the face are comparatively free. Other coexisting symptoms are, more or less puffiness of the integument, emaciation and weakness. The hair is dry and scanty, the eyebrows and eyelashes may be almost absent, and the nails are ill-developed. Such are the usual appearances in those cases in which there is no decided eruption.

A child presenting signs of syphilis at birth is generally puny and of small size, such children are often born before the full time. The weight is generally below the normal, even when the proper term has elapsed. The face looks wasted, the integument is thrown into folds, and the expression resembles that of old age. The nostrils, lips, and angles of the mouth are scored by fissures, and the submaxillary glands are hard and swollen. The skin generally is either dry and scurfy, or has a shining, waxy appearance; the smoky or sooty tint is well marked, and the discolouration is not affected by pressure. Various erup-

tions are found on the skin. The most serious and prominent of these are the vesicles or bullæ of pemphigus, most frequently found on the soles of the feet and palms of the hands. Some of these vesicles are apt to become ruptured during parturition, and excoriated patches remain. Macular and papular forms of eruption often coexist. Another and a pathognomonic symptom is swelling of the mucous membrane of the nose, accompanied by a profuse discharge from the nostrils. Fissures (rhagades) of the anus and condylomata around the orifice are frequent accompaniments of the above-mentioned symptoms, several of which require a more minute description.

Affections of the Skin.—*Syphilitic pemphigus* occurs in some cases, and is one of the earliest and most marked symptoms of the inherited disease. It may be found on the child at birth, or may appear a few days later. The seat of the bullæ (the palms and the soles) is a distinguishing characteristic. The eruption sometimes spreads to the dorsal surfaces of the hands and feet, and to the fingers and toes and thence to the forearms and legs respectively. Other parts of the body are occasionally attacked, and the development of the eruption is preceded, especially on the hands and feet, by a violet tint of the skin. In from two to three days vesicles, containing a serous fluid, are formed on these discoloured patches. The bullæ vary as regards their size, form, and number. The smallest are about equal to a hemp seed. They enlarge after their formation, the largest may attain the size of a small nut, and they often become confluent on the hands and feet. Their contents subsequently become milky and yellowish, and sometimes contain blood as well as pus. In cases where the eruption takes place some time after birth, the vesicles are smaller and disseminated and imperfectly formed.

The eruption runs a somewhat rapid course, and is often accompanied by febrile symptoms; the child constantly cries and refuses the breast, and keeps the wrists firmly flexed. In three or four days after their appearance

most of the bullæ burst and their contents escape, the surface is then covered with scales of epidermis and crusts, which, when detached, leave more or less deep excoriations. As a general rule, a child thus affected dies in a few days from exhaustion due to diarrhœa, &c. Life, however, is sometimes prolonged and the bullæ disappear, to be followed by a second eruption, which proves fatal.

With regard to the time at which the eruption may appear in those cases in which the child is free from it at birth, this, in the majority of cases, is some time during the first three days, but in exceptional instances its appearance has been postponed to the eighth week. The earlier it appears, the more decided are the other symptoms with which it is associated.

In the acquired form of syphilis there is no truly vesicular eruption, and much controversy has taken place as to whether congenital pemphigus is always to be regarded as a positive sign of inherited syphilis. It is stated that a similar eruption is sometimes found in children not the subjects of hereditary syphilis but much enfeebled from some other cause. In these latter cases, however, the bullæ are scattered over the general surface, whereas in syphilis they are for the most part confined to the hands and feet, and are always associated with other symptoms of the disease. It has also been noticed that the bullæ of non-syphilitic pemphigus are larger, less disposed to become confluent, and exhibit a greater tendency to desiccation. The spots on which they appear are less infiltrated and are rose-red, not violet in colour. The crusts are thin and yellowish, and their detachment reveals neither excoriations nor ulcers.

It may be confidently asserted that the bullæ of pemphigus appearing on the parts indicated at, or soon after birth, are unequivocal signs of hereditary syphilis. In many cases of this character one or both parents were obviously syphilitic.

The remaining cutaneous manifestations of hereditary syphilis more or less resemble those which occur in the

adult, but they differ in their duration, their order of sequence, and other respects. They may, however, be similarly classified. Thus they take the forms of roseolous, papular and pustular eruptions, and of gummatous infiltration. As a result of the delicate condition of the skin in infants and the manner in which it is exposed to moisture, the cutaneous lesions are for the most part less dry and firm than those in adults; and the disposition towards the formation of condylomata is especially marked. Owing to the activity of the general processes of nutrition, the eruptions are rapidly developed and large portions of the surface are soon affected. The same child often exhibits various forms of eruption at the same time; thus roseola frequently coexists with papules and the bullæ of pemphigus.

Roseola syphilitica appears either at birth or soon afterwards in the form of round defined spots, about a third of an inch in diameter, and of a bright red colour, sometimes with a tinge of violet, but never with a coppery hue, as is seen in adults. Its eruption is often accompanied by coryza and by other cutaneous symptoms, such as fissures about the mouth and anus, condylomata, &c. At first the spots disappear on pressure, but subsequently they remain owing to extravasation of the colouring matter. The eruption generally shows itself first on the lower part of the abdomen and on the thighs, and spreads from these to other parts, its development occupying several days. The patches are not elevated above the level of the skin, unless considerable exudation occurs, in which case the papular form of eruption may become developed. Some amount of desquamation may take place; and cracks or fissures are sometimes formed in severe cases.

The diagnosis is for the most part easy; the eruption is sometimes very slight, but it becomes more marked when the child cries and struggles, and when it is brought into a warm room. Other evidences of syphilis always coexist.

The infiltration of the skin is sometimes of a diffuse character, and takes place principally in the subcutaneous

connective tissue. The face and the lower extremities are the parts usually affected. Patches of skin are raised above the level of the surrounding portions and become darker in colour. As a result of tension these patches are smooth and shining; the movements of the affected part are impaired and any natural folds become obliterated. When parts of the face are thus infiltrated the expression of the countenance is changed, and the movements of the various muscles are impeded. The patches sometimes become fissured or ulcerated, and constitute the preliminary stages of mucous papules.

The papular syphilide in the acuminate form is far less common than roseola; but the two eruptions may coexist. In a few cases small brownish-red spots have been observed, on children at birth or during the first few weeks, the parts especially affected being the palms and soles, the sides of the thorax, the neck and the forehead. The papules are either disseminated or collected together in groups, and, where the eruption is very marked, considerable exfoliation may take place. This form of syphilis is usually obstinate and chronic in its course, and indicates a severe type of the disease. Other symptoms invariably coexist.

Moist papules, mucous patches, or condylomata lata.—Eruptions of this kind are frequently seen in hereditary syphilis. They are developed from flat papules, which originate either from healthy portions of skin, or, more frequently, from patches of roseola, as a result of increased exudation. This modification of the ordinary papule is especially apt to occur where the integument is thin, and wherever moisture is normally present, as, for example, between folds of skin and where the skin is continuous with a mucous membrane. These papules project above the level of the skin; they are for the most part roundish in form; some are minute, others measure half an inch or more in diameter. Their colour depends upon their situation, and varies from greyish-red to dark red. Moist papules are so called because of the condition of their surface, which becomes eroded or even ulcerated and is

covered by a yellowish viscid fluid. Their condition is much aggravated by inattention and want of cleanliness. The secretion often forms crusts or scales, the detachment of which exposes an ulcerated bleeding surface. Mucous papules vary much in number, and they appear on many portions of the body, their most frequent seats being the perineum close to the anus, the neighbourhood of the lips and nostrils, the umbilicus, the groins and axillæ, the buttocks, scrotum or labia, the popliteal space and inner aspect of the thighs, between the toes, &c. They constitute the most characteristic eruption of hereditary syphilis and are pathognomonic of the disorder.

The scales and crusts which are often found on the bodies of children affected with hereditary syphilis are the remains of papules. They are sometimes seen on the palms of the hands and soles of the feet. There is, however, in children, owing to the soft and moist state of the skin, far less tendency than in adults towards furfuraceous changes.

Pustular eruptions occur at an early stage, and take the forms of acne, impetigo, and ecthyma. Their appearance indicates a severe type of the general disorder. The acne-form pustules are developed from minute papules, and are most frequently seen on the chest, the buttocks, and backs of the shoulders. The little pustules sometimes burst and give rise to small crusts. The pustules resembling ecthyma are larger and appear later on, and are generally seen on the buttocks and lower extremities. Each pustule is developed from an infiltrated base and often contains blood as well as pus. Crusts are formed and their detachment gives rise to deep and serious ulceration. The pustules of impetigo are seated on an infiltrated base and are surrounded by a coppery-red areola. The eruption often becomes confluent and crusts form, the detachment of which reveals more or less loss of substance. The hairy scalp, the face, the thorax, the axillæ and the groins, are the parts usually involved. The ulceration is often of a serious character and causes much pain and

suffering. Syphilitic impetigo is distinguished from simple impetigo by the infiltrated bases of the pustules and the coppery-red colour of the areolæ.

The *nails* are occasionally affected in cases of hereditary syphilis; onychia being less common than paronychia. The appearances in both forms resemble those of the same affections in adults. A few cases are on record in which the nails of all the fingers and toes became atrophied and detached, and this process has been known to take place several times before a normal condition was established. When only the parts surrounding the nail are red and swollen, the process generally subsides without causing detachment. These affections of the nails, occurring in infancy, are pathognomonic of hereditary syphilis.

Gummata and gummatous ulcers are rarely seen before the sixth month, and they usually follow other forms of cutaneous eruptions. Nodules appear at various points on the surface of the body, and gradually increase in size. Their subsequent course resembles that of similar growths, the result of the acquired form of the disease. Absorption rarely takes place; disintegration followed by ulceration is the usual course. The process is tedious and the sores may keep open for long periods. When the gummata are situated over a bone, periostitis, caries or necrosis are very apt to become induced.

Affections of the Mucous Membranes.—Various portions of the mucous membrane are frequently affected in cases of hereditary syphilis; lesions accessible to observation occur on the lips and in the mouth, throat, and nose, and are in many cases the most prominent manifestations of the complaint. The parts of the mouth and throat most often involved are: the lips, the angles of the mouth, the inner surface of the cheeks, and the mucous membrane of the hard palate. Next in order of frequency come the pillars of the fauces, the tonsils, and the tongue. The lesions consist of excoriations, fissures, mucous patches, and ulcers. Fissures of the lips are frequently seen, involving both the mucous membrane and the skin, and

partly concealed by crusts of blood and purulent discharge. They cause great pain and distress, especially when the child cries or attempts to take the breast. Mucous papules are also frequent about the lips and the angles of the mouth, and on various portions of the mouth, throat, and tongue. They take the form of flattened, roundish elevations, much paler in colour than the surrounding mucous membrane, which is generally redder than usual. The pearly white covering of these patches may cause them to be mistaken for aphthæ in process of healing. The eruption in aphthæ, however, is not elevated, and after the exudation has separated, minute depressions, but no ulcers, are left. Moreover, the aphthous eruption is speedily developed and soon subsides. Owing to the moisture by which they are surrounded and the constant movements of the parts, the papules rapidly become converted into ulcers, some of which soon heal, while others tend to increase in size. The angles of the mouth, the tongue, the inner surface of the cheeks and the gums are especially prone to be thus affected. Ulceration of the pharynx is far less frequently met with. In severe cases, the ulceration of the gums sometimes extends to the subjacent bones, inducing caries or necrosis, and if the ulcers become confluent, the process is apt to spread to the hard and soft palate. These lesions are always accompanied by corresponding affections of other parts, *e.g.* the nose, the larynx, and the intestines. Under such circumstances, it becomes almost impossible to feed the child; diarrhœa sets in, and death occurs from exhaustion.

The *diagnosis* is for the most part easy; aphthæ and thrush are the only affections which at all resemble the lesions due to hereditary syphilis. In thrush there is a distinct white coating, or many white patches resembling curdled milk, and easily removable. The subjacent mucous membrane is reddened and swollen, but not ulcerated.

It must never be forgotten that the secretion from these mucous papules is highly contagious. The greatest care must, therefore, be taken to prevent the disease from being

communicated by the child to other persons. The mother alone should be allowed to suckle the child, and if she be unable to do so, it must be artificially fed. All bottles, cups, &c., used for this purpose, must be kept scrupulously clean.

An affection of the mucous membrane of the nose, is one of the earliest and most marked symptoms of hereditary syphilis. It often precedes the cutaneous manifestations, and its existence is sufficient to establish the diagnosis. The first indications of this coryza are redness and swelling of the nose, externally and internally. After a few days, a serous or mucous discharge flows from the nostrils; this increases in quantity, becomes thicker, purulent, and sanious, and emits an offensive odour. The child's breathing soon becomes embarrassed, and is attended by snorting and snuffling, owing to the swollen state of the mucous membrane and the formation of crusts. The nostrils and lips are scored by fissures, which readily bleed, and cause much pain and distress to the child. The respiration becomes more and more impeded, and takes place only through the mouth. This difficulty, coupled with the soreness of the lips, causes the child either to refuse the breast or to relinquish the nipple after a few attempts at sucking. The child, therefore, soon becomes weakly and emaciated. Removal of the crusts exposes ulcers, more or less deep, and sometimes involving the cartilages and the bony framework of the nose. Caries and necrosis of these bones, perforation of the septum, flattening or depression of the ridge of the nose, are the consequences which result in severe cases. Complications in other organs are prone to occur. Sometimes the mischief spreads to the larynx, in which case the voice becomes hoarse or even extinct. Bronchitis, pneumonia, and obstinate diarrhœa sometimes supervene and accelerate a fatal issue.

There can seldom be any difficulty in the *diagnosis* of this syphilitic coryza. Its rapid progress and serious character, the swelling of the mucous membrane, the pro-

fusion of the discharge, the crusts and fissures in the nostrils, and the ulceration are sufficient to distinguish it from ordinary coryza. In many cases the coryza is accompanied by some form of eruption.

The other manifestations of hereditary syphilis which remain to be described are those connected with the eyes, the teeth, the ears, the bones, and various internal organs.

Iritis and Keratitis are the principal affections of the eye in hereditary syphilis. The appearances in this form of iritis resemble those of the same affection in adults the subjects of syphilis. The inflammation pursues a chronic course, and the symptoms generally are far less acute than those of iritis due to non-specific causes. They have been observed in a child only a few weeks old; in twenty-three cases collected by Mr Hutchinson, the mean age was five months and a half, the ages varying from six weeks to sixteen months: of these infants sixteen were females. The symptoms may, however, appear as late as the tenth year. In the case of young infants, other symptoms, such as coryza, condylomata, ulcers and fissures about the mouth and anus generally coexist. It should be born in mind that the symptoms of the iritis are sometimes so slight as to be entirely overlooked until the pupil is adherent or even occluded. In the majority of cases only one eye is affected. When the symptoms are slight, recovery may be expected under mercurial treatment, but in severe cases adhesions of the iris and irregularities of the pupil often remain. Congenital cataract has been noticed in a few cases of hereditary syphilis.

Interstitial Keratitis.—This lesion has been already described in the chapter on affections of the eye (see page 203). It seldom exists alone, but is generally associated with a peculiar condition of certain teeth, about to be described. The remains of other previous lesions can also generally be detected.

The Teeth.—Of late years much attention has been drawn to the state of the teeth in cases of hereditary syphilis. It has long been known that certain diseases of

childhood, notably scrofula, certain eruptive fevers and ulcerative stomatitis, have an important influence upon the follicles of the second dentine, those of the milk teeth also being more or less affected in certain cases. In many cases of hereditary syphilis, the front teeth, particularly the central incisors, present certain peculiarities; and, associated therewith, the cornea is often found to bear the marks of the peculiar interstitial inflammation above described. When this coexistence of symptoms is observed, it may be regarded as certain that the case is one of inherited syphilis. Teeth thus affected are, as a general rule, imperfectly developed, and of a colour varying from yellow to a peculiar ashen grey, and they differ from the ordinary scrofulous or stomatitic teeth in very important particulars. In the latter forms the enamel is more or less imperfect, notched and pitted irregularly, but in the typical syphilitic cases, the incisors are more or less pointed or narrow at their edges and furrowed with a *crescentic* notch, which once seen cannot easily be mistaken for any other condition. Moreover, it is the *central* incisors which are especially affected, the deformity being in nearly every case symmetrical. The two teeth generally converge but sometimes they are widely apart. These appearances are so decisive that on discovering them in a child, and taxing the father with having been the subject of syphilis, he will generally admit the truth of the indictment, and exhibit some surprise at the sagacity of the interrogator. The symmetrical character of the affection constitutes presumptive evidence in favour of its specific origin, just as in certain syphilitic skin diseases, the symmetry of the lesions is a peculiar characteristic. It must be admitted that ordinary stomatitis occasionally gives rise to imperfection of dental structure, but the specific inflammation gives a peculiarly diagnostic mark. When it is remembered that the teeth, hair, skin, and nails, are all tegumentary or dermal organs, and that the constitutional effects of the syphilitic virus often show themselves in their greatest intensity in structures of this character, the

lesions of the teeth in cases of hereditary syphilis are easily intelligible. Mr Hutchinson has carried his investigations into the imperfection of dental structure further still, and has given the name of *mercurial* teeth to a peculiar conformation of the molars, in which the enamel is found rugous, pitted, and irregular, and peculiarly liable to caries. But inasmuch as this condition is frequently observed amongst the inhabitants of countries where mercury is never used, or as in Germany, used only in minute quantities, it is probable that this distinction is too minute or rests upon too slight a basis to be definitely accepted. But it cannot be doubted that the crescentic notched teeth are peculiarly nay even certainly diagnostic of inherited disease.

Affections of the Ear.—Attention has been called by Mr Hutchinson to the frequent occurrence of *deafness* in the subjects of congenital syphilis. The appearance of this symptom is generally coincident with that of the keratitis, but it may precede or follow the development of the changes in the eye. Both ears are usually affected, and in the majority of Mr Hutchinson's cases the deafness was complete. More or less otorrhœa sometimes precedes the loss of hearing, but in the cases referred to, the changes in the membrana tympani were not sufficient to account for the deafness. This, therefore, must be considered as due to some lesion of nervous portions of the auditory apparatus ; the cochlea is the most probable seat of the disease. In the early stage, the very high notes are lost much sooner than ordinary sounds, such as the voice. An important fact connected with this affection is that adult life is often reached before the symptoms make their appearance. In early life deaf-mutism is a frequent result of this affection. The *prognosis* is unfavourable. Some of the patients become totally deaf, others only partially so ; and in the former class the deafness often becomes complete in the space of a few weeks.

Affections of the Bones.—Until a very recent date these affections were considered as extremely rare in

infants. Diday says that if the disease which attacks the new-born child is severe, it proves fatal before it reaches the tertiary stage ; if it be slight, specific treatment generally suffices to neutralise it before it reaches the advanced stage in which changes in the bones are usually developed. Subsequent observers have, however, discovered that several affections of the bones occurring in young children and supposed to be due to rickets and scrofula, are really connected with the syphilitic taint ; and it is now generally admitted that peculiar bony lesions, in addition to those met with in the acquired form of the disease, are to be found in the subjects of hereditary syphilis. Syphilitic lesions of the periosteum and of the bones, with or without the deposition of gummatous products, occur in these cases and resemble in their progress and consequences those described in a previous chapter. Dactylitis is also sometimes observed in the subjects of hereditary syphilis.

But in addition to these affections there are certain others which are the peculiar results of hereditary syphilis and are due to disordered growth of the bones. This disorder shows itself by various irregularities in the process of ossification, which may be either accelerated or retarded or even altogether checked. New formations of bony tissue in the form of osteophytes, lesions of the epiphyses of the long bones, and the formation of medullary spaces in the compact substance of the long and flat bones, are the main results of these processes.

The most important and the most common of these lesions is that which occurs at the junctions of the diaphyses with the epiphyses of the long bones, and at the ends of the ribs at their points of union with their cartilages. Retarded ossification and separation of the epiphyses are the prominent alterations. The diaphysis has an uneven rugous appearance ; the articular portion is swollen, thickened, and softer than natural. The cartilage between it and the epiphysis is much increased in dimensions. There is abundant calcareous deposit, but little or no

bone is produced. If the process is continued, the cartilage is eventually converted into a soft, spongy, or gelatinous mass, infiltrated with yellow pus.

The processes which take place between the diaphysis and the epiphysis have been described as follows by Wegener, one of the most recent investigators. In the first stage of the affection, the cartilage cells are slightly increased in number; but the metamorphosis of the calcareous cartilaginous layer is retarded, and its lower strata perish owing to the vessels being insufficient in number for their nutrition. This necrosed portion of cartilage acts as an irritant and sets up inflammation in the adjacent bony tissue. Suppuration follows, accompanied by the development of granulations from the medulla, with separation of the epiphysis from the diaphysis as a further result. Wegener, therefore, believed the process to be of inflammatory origin and he described it as osteo-chondritis. Another observer, Parrot, insists upon the development of new osteophytic formations from the periosteum as a preliminary stage. This is followed by calcareous incrustation of cartilage and subsequently by gelatinous transformation and softening of the bone. The symptoms of these lesions are malformation of the affected part and inability to move the affected limbs, sometimes to such an extent as to give rise to the suspicion that the case is one of paralysis, of nervous origin. M. Parrot has accordingly named this condition "syphilitic pseudo-paralysis." In well-marked examples the arms hang down in a state of pronation, while the lower limbs are elongated and oscillate on the slightest shake of the patient. There is nothing abnormal in the spinal cord or nerves, there is little or no pain, and the muscles respond to electrical tests. Crepitation can sometimes be detected. The bones most frequently affected are those of the forearm, leg, arm, and thigh, the clavicle, the metatarsal and metacarpal bones, and the ribs at their anterior extremities. In severe cases the lesions may be found in connection with all these bones, and they constitute a distinguishing characteristic of

hereditary syphilis. They are not found in cases of early acquired syphilis. Fractures of the diaphyses of the ribs near the axillary line, have been observed in a few cases of congenital syphilis. Other lesions of the atrophic type occur in the bones of the skull, and give rise to wasting of the osseous tissue, and sometimes to perforation.

Affections of an opposite character, *i.e.* in which new formation of bony tissue is the prominent feature, are also common. The epiphysial ends of the long bones of the extremities are the portions generally affected. Two forms of these osteophytes are met with; the hard or osteoid, and the soft rachitic or fibro-spongioid. The former of these may occur at any period; the latter is found only in children who have passed the sixth month. The hard growths are softer and less resisting than osseous tissue, and differ from it in their structure. They consist of fibrous and osseous trabeculæ, generally perpendicular to the surface of the bone. The soft growths consist of the spongioid tissue; they are fibrous in structure and contain more vessels. Varieties intermediate between these two forms are also met with. In the skull, osteophytic growths are developed only in older children, and are found almost exclusively at the periphery of the frontal and parietal bones, beginning at two or at all of the four corners of the anterior fontanelle. They begin as lenticular, red or violet elevations, rising quite abruptly from the outer table; they are porous and spongy, sometimes hard, but very rarely smooth. They gradually extend to the neighbouring parts, and in marked cases affect the whole of the cranial vault. Obliterations of the sutures and consequent changes in the shape and dimensions of the cranial cavity are occasional results. The growths at the corners of the anterior fontanelle, constituting what M. Parrot has called the *natiform* deformity, are pathognomonic of congenital syphilis.

Formations very similar to those above described are met with in rickets. M. Parrot thinks that this latter affection

is always connected with hereditary syphilis; but it would appear more probable that syphilis is only one out of many causes which may be concerned in the production of rickets. This question will be discussed in the next chapter.

Affections of Internal Organs.—The *liver* is the organ most frequently affected. It is usually enlarged, harder than in the normal condition, brownish-red in some places and yellowish in others. The cut surface presents a mottled appearance the result of a general or diffuse infiltration, and the separate acini are scarcely distinguishable. Pale yellow, firm, circumscribed nodules, as large as peas, streaks of indurated tissue and cicatricial contractions have been noticed in many cases. The *spleen* is often considerably enlarged and indurated, and the capsule is sometimes covered by pseudo-membranous formations. Gummatous infiltration has not as yet been observed. Enlargement of the *pancreas* has been often noticed. This increase is due to hypertrophy of the interstitial connective tissue, the glandular portion of the organ being in a condition of atrophy and degeneration. Gummatous formations, some very minute, others as large as a cherry-stone, have been found in the *kidneys*. The *supra-renal capsules* are sometimes enlarged and contain a fatty or gelatinous material. Various changes have been found in the *alimentary canal* in cases of hereditary syphilis. In one instance, Peyer's glands presented signs of fibroid degeneration. They projected above the mucous membrane, were of a grayish red colour, and presented a compact and shining surface. No traces remained of any glandular structure. The surrounding mucous membrane was more or less ulcerated. Enlargement of the mesenteric glands has been noticed in a child whose body was covered with a severe pustular eruption, and who presented other signs of hereditary syphilis.

Important changes, sometimes of a diffuse and sometimes of a circumscribed character, are often found in the

lungs in cases of hereditary syphilis. Patches of hepatisation, more or less complete, are distributed throughout the organs, which are also firmer than natural and resemble fœtal lungs. Nodules, varying in size from that of a pea to that of a hazelnut, are also met with. These are at first white and hard, but afterwards become soft and yellow in their centres, and finally break up into semi-purulent masses. A firm capsule of connective tissue surrounds each nodule. These gummatous deposits are often found associated with similar lesions in the liver. The mucous membrane of the trachea and bronchi is sometimes dotted over with ulcers in various stages.

The Nervous System.—Very little is definitely known with regard to the condition of the nerve-centres in these cases. Virchow has described, as a not unfrequent appearance, the occurrence of small white punctate deposits, almost exclusively in the white substance of the brain and columns of the cord. These deposits are composed of accumulations of cells containing fatty granules; the principal change consisting in fatty metamorphosis of the cells of the neuroglia. The deposits closely resemble miliary gummata. Virchow uses the terms "interstitial encephalitis and myelitis" in describing the appearances. His cases were those of children stillborn, or dying soon after birth; it is not known whether such lesions are always of a fatal character, or whether they are compatible with life. It is not improbable that life may be prolonged, and it has been suggested that deposits of this character, or their remains, may sometimes be the cause of idiocy, epilepsy, chorea, and other nervous disorders of early life. Hydrocephalic effusions, and inflammation of the dura mater, due to disease of the cranial bones, are occasional results of the syphilitic taint. Thickenings of the coats, and occlusion of the cerebral arteries have been observed in a few cases in which life had been prolonged for several years. With regard to symptoms of lesions of the nervous system, convulsions, ptosis, paralysis of the facial nerve, atrophy of the optic nerve and paraplegia

have been observed in children the subjects of hereditary syphilis.

The *thymus* gland is sometimes affected in cases of hereditary syphilis. Accumulations of pus have been found in its substance in fatal cases where severe pustular skin-eruptions were present, and it would seem probable that such abscesses are the results of gummatous deposits which have also been noticed in this gland. Abscess of the thymus gland has never been observed in children free from the syphilitic taint. Disease of the *testicles* has been discovered in a few cases, these organs being considerably enlarged, hard and nodular. No gummata were discoverable, the enlargement being due to hypertrophy of the connective tissue.

But little is known with regard to the effects of inherited syphilis upon the *blood-vessels*. The cutaneous and other hæmorrhages which sometimes occur in these cases, have been attributed to a form of endarteritis, similar to that which occurs in connection with the acquired form. Troublesome hæmorrhage from the umbilical vein has been observed in infants suffering from hereditary syphilis.

Diagnosis of Hereditary Syphilis.—The symptoms are by no means invariably so distinct as to admit of a positive conclusion with regard to their origin. In doubtful cases, however, the nature of the disease generally becomes evident after a brief interval. The symptoms once developed pursue a rapid course, and unless checked by treatment soon increase in number and intensity. As already mentioned, the subjects of hereditary syphilis may be arranged in three classes. (1) Those to all appearances quite healthy at birth, and presenting no symptoms of disease until several days or weeks, or even months have elapsed. (2) Those showing no marked signs of syphilis during an indefinite interval, but ill-developed, puny and emaciated from the first. (3) Children born with unmistakable signs of syphilis upon them. In the children belonging to the first category, refusal to take the breast is often the first symptom, and this is due to cracks and sores about the

lips and mouth. After a few days the symptoms of nasal catarrh generally set in and are characteristic of the disease. The fissures about the nostrils and lips, the evidences of ulceration of the nasal mucous membrane, the discharge of a muco-purulent or sanious fluid, the formation of crusts in the nostrils, mucous papules in various parts, *e.g.* around the anus, on the lips and behind the ears, on the genital organs, in the groins, &c., are pathognomonic of the disease. Alterations in the voice, swelling of the inguinal and cervical glands, dryness of the skin and some one or other of the eruptions already described are generally superadded to the above symptoms as time goes on.

In the case of children belonging to the second category, the peculiar appearances already referred to (see page 275) are sometimes of so decided a character as to be pathognomonic of the disease. If, however, they are only slightly marked, it will be impossible to give a decided opinion until other symptoms manifest themselves.

When cutaneous lesions are present at birth (see p. 275) the diagnosis is for the most part easy. Coppery red patches on the skin, mucous papules on various parts, ulcers and fissures about the anus, nostrils and lips, the state of the nose, the bullæ of pemphigus, the inflamed, shining, tense condition of the palms and soles, the excoriations and ulcers of these parts, constitute a decidedly characteristic group of symptoms any or all of which may be present.

Other diagnostic signs of hereditary syphilis as seen in children during the first year are those indicative of retarded development. The eruption of the teeth, the closure of the fontanelles, and the ossification of the cranial sutures are considerably delayed. The extremities of the long bones are enlarged, as is seen especially at the costal ends of the ribs, and at the carpal ends of the radius and ulna.

In later life hereditary syphilis can often be recognised by such traces as falling-in of the nose, prominence of

the frontal eminences, cloudiness of the cornea, the peculiar malformations of the incisor teeth, and the presence of fine linear cicatricial marks, extending from the nostrils and the angles of the mouth.

Prognosis of Hereditary Syphilis.—This is unfavourable in the large majority of cases. Zeissl states that more than two-thirds of the deaths due to syphilis occur in the subjects of the hereditary form of the disease. The child's system is, so to speak, saturated with the poison, and its condition resembles that of an adult in the tertiary stage. There is therefore a considerable difference *in limine* between the hereditary and the acquired forms. The time at which the child's symptoms are manifested is a very important element in the question of the prognosis. If the symptoms are unmistakably present at birth, or appear very soon afterwards, a fatal termination may be expected. On the other hand, if the symptoms are latent for two, three, or more weeks, the prospect is much more favorable, and as a general rule, it improves in a degree proportionate to the length of the interval. The prognosis is of course influenced by the condition of the child and its prospects as regards careful nursing, &c. When the appearance of the symptoms is delayed until the second or third month the disease is generally of a mild type. Severe affections of the mouth, nose and throat, pustular eruptions, and evident disease of internal organs, *e.g.* the lungs and liver, are the most formidable sources of danger. When the mouth and throat are fissured and ulcerated it may become impossible to feed the child, and exhaustion rapidly follows. Diarrhœa and vomiting often usher in the fatal termination. When recovery takes place from the early symptoms relapses sometimes occur, the hereditary taint showing itself in malformations of the teeth, keratitis, disease of the bones of the palate and nose &c. The question of latency has been already considered (see page 273) ; the relations between syphilis and other disorders will be discussed in another chapter. Whether hereditary syphilis

protects the subject of it from the full effects of the acquired form has not as yet been decided.

Treatment.—Mercury in some form is the remedy to be employed, and the results in many cases are very satisfactory. It may be administered either internally or by inunction. For the former purpose, the Hydrarg. cum Cretâ is the best preparation, and may be given in one-grain doses twice or three times a day. If it causes diarrhœa, a third of a grain of Pulv. Ipecac. Comp. should be added to each dose. The result must be carefully watched; marked improvement is generally noticeable when the medicine has been given for about a fortnight. The dose may then be diminished, but the medicine should be persevered with until the symptoms disappear, and its use must be renewed whenever any sign of a relapse becomes apparent. Where there is much debility and emaciation, cod-liver oil should be given at the same time. Inunction is a convenient way of administering the mercury, and is especially adapted for cases in which diarrhœa exists.

It must not, however, be adopted when severe and extensive cutaneous lesions are present. Five or six grains of blue ointment, diluted with an equal part of vaseline, should be rubbed daily into the skin, a fresh part of the child's body being chosen for each application; or twenty to thirty grains of the ointment similarly diluted may be spread upon a piece of flannel, which is kept applied to the child's abdomen or thorax and changed every day. A warm bath should be given every few days.

In dealing with the cutaneous lesions, the greatest cleanliness must be enjoined. The sores and fissures about the mouth and nose should be dressed with red oxide of mercury ointment; condylomata should be dusted over with calomel. Deep and painful fissures about the mouth or the anus should be touched with a finely-pointed piece of nitrate of silver. A camel-hair brush dipped in glycerine and water must be used to clear away the secretion from the nostrils and mouth. Baths containing the perchloride of mercury are sometimes useful where the

skin-affections are severe. For this purpose, from fifteen to forty grains of the perchloride are dissolved in water with an equal weight of chloride of ammonium, and added to the child's ordinary bath of warm water, which should be used for about half an hour daily. The osseous lesions require iodide of potassium or the iodide of iron.

A very important point is that which relates to the feeding of the child. If the mother is unable to suckle it, artificial feeding must be resorted to. It is not justifiable to employ a wet-nurse, unless a woman can be found who has already suffered from syphilis without her health being much impaired. Even in this case, however, there is the risk that the woman may convey the disease to a third individual, if lesions be present on the lips of the infant she suckles. The mother, as has been shown at the beginning of this chapter (see page 266), is free from any such risk, at all events in the large majority of cases. When, as may sometimes happen, the child is syphilitic and the mother to all appearances healthy, cows' milk, or some artificial preparation, must be employed. Even in these cases, however, if there are no signs of syphilis about the mouth of the child it is very improbable that the disease would be conveyed to the mother, and she might, therefore, be allowed to suckle the infant, under proper precautions.

CHAPTER XXV

THE RELATIONS BETWEEN SYPHILIS AND OTHER DISEASES.—SYPHILIS AND WOUNDS

The influence which certain pathological conditions have upon the course of syphilis, and the manner in which syphilis increases the gravity of other disorders, are subjects which have not as yet received much attention. With regard to the first of these questions, it may be regarded as an established rule that the general health of the patient has a very considerable influence in determining the course of the disease. *Cæteris paribus,* persons in impaired health from any cause will suffer more severely from syphilis than robust individuals, and the scrofulous diathesis, if in any way decided, influences the disease in a very unfavorable manner. The severity of syphilis in tropical climates is due, in many cases, to the fact that the patients have previously suffered from malarious fevers, dysentery, and other exhausting diseases. The effect of alcohol upon the gravity of the disease has been already referred to (see page 24).

With regard to the acute diseases, it would appear that those attended with febrile symptoms sometimes interfere with the evolution of the symptoms of syphilis. The appearance of an acute disease, such as severe fever, inflammation of the lungs, &c., supervening soon after infection has, in some cases, seemed to retard the development of the cutaneous syphilides. Lancereaux mentions several cases in which syphilitic eruptions disappeared on the supervention of an attack of cholera. An attack of smallpox does not apparently affect the course of a syphilitic

eruption already developed. The occurrence of erysipelas, however, influences the course of syphilitic eruptions. In a case in which this disease supervened in a patient the subject of syphilitic papules, produced by artificial inoculation, these were observed to become level with the surface while the attack of erysipelas lasted, and to regain their prominence after its subsidence. Certain constitutional conditions, notably the gouty and the scorbutic diatheses, tend to aggravate the severity of syphilis.

With regard to the influence of syphilis upon other diseases, there are some which it certainly aggravates, while apparently it does not interfere with the course of others. Scrofula, tuberculosis and rheumatism belong to the first category, in which may also be included wounds and injuries in some cases. It cannot be admitted that syphilis actually produces either scrofula or tuberculosis, but it doubtless increases the severity of these affections. When scrofulous subjects become syphilitic, the skin, the glands, and the periosteum are especially prone to become affected; and suppuration, which is not common in syphilis, is liable to occur. Scrofula impresses a more lasting character upon the local manifestations of syphilis. When patients suffering from pulmonary tuberculosis become syphilitic, the course of the disease is always accelerated. Such a result is only to be expected in view of the tendency, which syphilis sometimes exhibits, to localise itself in the lung, and to produce symptoms closely resembling those of phthisis (see page 162). Some of the symptoms of chronic rheumatism and those of certain syphilitic affections of the bones and joints much resemble each other, and a combination of the two diseases is certain to aggravate the symptoms of both. Patients thus affected would be especially liable to suffer from pains in the joints and the more superficial bones, becoming more severe at night and in damp and cold weather. It would appear probable that syphilis influences gout in a very special manner. Patients suffering from gout are usually middle aged, and syphilis contracted after forty is always a serious affec-

tion and certainly tends to aggravate all chronic disorders, and especially those accompanied by evidences of defective elimination. Moreover, febrile disturbance, due to syphilis or other causes, is liable to give rise to severe pains in the joints in gouty subjects.

The question as to whether syphilis exerts any influence upon the healing process of wounds is important in respect to surgical operations on those suffering from this disease. It would appear that the union of fractures is sometimes delayed in syphilitic subjects; and treatment of the disease by iodide of potassium has been known to disturb the union in cases of recent fracture. In a patient under my care the callus formed around a recent fracture of the arm rapidly became dissolved while this remedy was being administered for a rupial eruption. It is by no means certain that syphilis exercises any influence upon the healing of incised wounds. If, however, an incision be made into a recent syphilitic cicatrix, or into a cutaneous gummatous tumour ulceration will probably be induced. Zeissl, while denying that the healing of incised wounds in syphilitic subjects differs in any way from the ordinary process, admits that syphilitic inflammatory products may be called into activity as a result of continuous pressure or blows. He cites a case in which tracheotomy was performed upon a syphilitic subject. The upper portion of the wound remained normal, the lower portion, upon which the canula pressed, was the seat of chancrous ulceration. In plastic operations for the relief of deformities due to syphilitic ulceration, it is of course advisable to wait until all active manifestations have ceased. In interfering with a syphilitic cicatrix there is always the risk that ulceration may be reproduced and may spread to the parts around.

Prof. Verneuil has collected a number of cases from which he concludes that wounds in syphilitic subjects are liable to present a peculiar appearance and to follow an abnormal course. He states that the wound sometimes ulcerates and sometimes remains stationary and then cica-

trises very slowly. He also affirms that syphilis may localise itself in the form of ulceration or a gummatous growth at the seat of a wound in a region previously free from any manifestations. Verneuil's experience, however, is not in accordance with that of the majority of surgeons. With regard to the effect of contusions it is probable that exostoses often arise from this cause in syphilitic subjects; the specific inflammation is localised at the point injured. It is in all probability due to this circumstance that nodes are most frequently found on the frontal bone, the sternum, clavicles, tibia, &c., these bones being superficial and most exposed to cold and injury. In a case under my care, of a gentleman who spent much of his time on horseback, large nodes became developed on the inner side of the head of each tibia. The fact that syphilitic manifestations are prone to appear on parts exposed to irritation is also illustrated by the frequent development of mucous papules on the lips and tongue of smokers.

In connection with the subject of syphilis and wounds some experiments recently made by Tarnowski, of St. Petersburg, possess considerable interest. Starting from the fact that the manifestations of syphilis are especially prone to appear in parts exposed to irritation, and that syphilitic infiltration sometimes develops around a seat of injury in persons who show no other signs of the disease, Tarnowski aimed at exciting syphilitic manifestations by irritating the integument. For this purpose he applied small portions of Ricord's paste to several spots in two hundred syphilitic subjects and in fifty others suffering from various chronic affections of the skin and internal organs. He expected to discover a test for obscure cases of visceral syphilis, and also a means for ascertaining whether the disease had really come to an end in any given case. No definite conclusion could, however, be drawn from the results obtained, for in some patients, obviously syphilitic, no decided infiltration appeared round the margins of the wounds. In other cases the cauterised spots were surrounded by a dusky red border of infiltration, which did

not appear until the inflammatory reaction, due to the caustic, had completely subsided. This result could almost always be obtained in the interval between the primary induration and the development of secondary symptoms, and especially in persons who had taken no mercury; but in the later stages and in cases of visceral syphilis the results were generally negative.

Certain constitutional disorders of childhood have been regarded as in some cases more or less directly connected with syphilis in the parents. It has been thought that this disease may not only be transmitted as such but may appear in the offspring in the form of scrofula, tuberculosis, or rickets. To establish the existence of such a relation it would be necessary to prove that these diseases are more common in children who are suffering or have suffered from inherited syphilis than in others; and that the majority of those children of syphilitic parents who are free from the disease themselves, are especially prone to suffer from one or other of these constitutional disorders, which are, so to say, the reflection of the specific disease. These assumptions are, however, destitute of sufficient foundation. The syphilitic dyscrasia is not capable of transformation into scrofula, tuberculosis, or rickets. All that can be admitted is that a condition of debility, due to syphilis, may favour the development of those disorders.

In the case of *scrofula* it has been noticed that children who have passed through several stages of hereditary syphilis sometimes present glandular swellings and caseation, but these appearances are due to the disease itself, and to its effects on the general health. The severe tertiary symptoms in the mucous membranes and bones, which sometimes manifest themselves at a later period in the subjects of hereditary syphilis, closely resemble the effects of scrofula, but their connection with syphilis is proved by the fact that they are preceded by well-marked symptoms of the hereditary disease. And with regard to children presenting no signs of the inherited disease,

although the offspring of syphilitic parents, it has not been shown that scrofula is more common among them than among those whose parents had never suffered from syphilis. It may, however, be conceded that the children of parents much reduced in health by syphilis would be more likely to exhibit signs of scrofula than those whose parents were healthy, but the possession of such an influence is by no means peculiar to syphilis.

The same remarks will apply to *tuberculosis*. Hereditary syphilis predisposes to this affection only by enfeebling the general health.

With regard to *rickets* syphilis may be said to cause various degrees of this affection by the cachexia which it produces. In this respect its influence is the same with that of any other chronic disease which impairs the nutrition of the body generally. When diarrhœa is a marked symptom of hereditary syphilis signs of rickets are very apt to appear, but the same result often follows prolonged diarrhœa due to other causes. Cranio-tabes is probably sometimes due to congenital syphilis; but the evidence on this point is far from demonstrative. That in the vast majority of cases rickets is utterly independent of syphilis was clearly shown in the discussion on the subject at the International Medical Congress of 1881.*

* See 'Trans. of Congress,' vol. iv, p. 51 *et seq.*

CHAPTER XXVI

MEDICO-LEGAL AND SOCIAL QUESTIONS CONNECTED WITH SYPHILIS.—SYPHILIS AND MARRIAGE

Various medico-legal questions are connected with the subject of syphilis. (1) In cases of rape medical evidence is sometimes required to determine whether one or both of the persons concerned are suffering from syphilis. (2) In the cases of nurses infected by their nurslings and *vice versâ*, a medical investigation is requisite for the discovery of the infecting source. (3) The question of syphilis and vaccination has been already considered (see page 50). Its medico-legal bearings are very important, now that the possibility of the transmission of syphilis by means of vaccination is clearly recognised. (4) Midwives not unfrequently contract the disease from syphilitic patients, and subsequently communicate it to other women. Cases of this nature are sometimes brought before a court of law. (5) In cases of doubtful identity the existence of hereditary syphilis may constitute evidence of some value. (6) A medical witness may be asked to decide whether syphilis is invariably communicated during intercourse, when one of the parties concerned is suffering from the disease. (7) In actions for divorce, the existence of syphilis constitutes presumptive evidence of infidelity on the part of the accused.

(1) In cases of rape, the existence of syphilis in both accuser and accused may serve to corroborate the charge. If the disease be present in the one and absent in the other, the evidence afforded by the examination tends, on the other hand, to rebut the accusation. As a matter of

course, careful inquiry must be made as to the precise time at which the alleged rape was committed, and the condition of the sore must be minutely observed. If a woman bringing a charge of rape against a man be examined immediately after the perpetration of the offence, and be found to be suffering from decided syphilis, the unchastity of the female is proved by the examination. The man, if examined at once, will, in such a case, even if guilty of the offence, present no sign of syphilis, and he may, of course, escape altogether. If, however, an indurated sore appears three or four weeks after the date of the alleged offence, the fact may serve to support the charge. In the case of soft sores, the incubation period will, of course, be much shorter. If both the accuser and the accused are suffering from indurated sores, the question will arise as to whether a sufficient time has elapsed for incubation to take place. In the case of children upon whom attempts at rape have been made, the communication of syphilis constitutes a proof upon which much reliance can be placed. Before coming to a positive conclusion, it is necessary to be satisfied that the disease could not have arisen from infection irrespective of attempts at sexual intercourse.

(2) The most common question for medico-legal inquiry arises when a child entrusted to a wet nurse, presents, after a certain time, evident signs of syphilis. The source of the infection is the point to be determined. In a second and more numerous class of cases, belonging to this category, it is the nurse who alleges that she has been infected by her nursling. The complaint, in these latter cases, is generally made late, sometimes after the death of the child. In forming his opinion, the medical jurist is guided by the date, seat, and form of the specific lesions in the nurse and in the child, both of whom must be carefully and minutely examined. Inquiries must also be made into the past and present state of health of the parents and that of their other children, if any. The condition of the children and husband of the nurse should also be investigated.

In the examination of the child, the fact must be borne in mind that in the majority of cases the first signs of congenital syphilis appear before the end of the second month (see page 272). After the expiration of three months, the probability that any symptoms will appear is comparatively small. The most contagious lesions, as regards the nurse, are the mucous patches about the mouth, lips, and nose, coexisting with which similar affections are usually to be found in the neighbourhood of the anus and genital organs. Persistent and obstinate coryza, vesicular, pustular, or bullous eruptions, lesions of the nails, affections of the epiphyses of certain bones are other prominent symptoms which occur in various combinations. When syphilis is communicated by the nurse to the child the first symptom will be a primary lesion about the lips or tongue. The evolution of the disease will be different from that of hereditary syphilis.

With regard to the nurse, it is all-important to obtain accurate information as to the state of her health before she began to suckle the child, and to ascertain in which of the two the symptoms really appeared first. When the nurse is affected by the child, the first symptom which she presents is generally an indurated ulcer or an ulcerated papule, upon the nipple or close to its base. This follows the usual course; the induration increases; the glands in the axilla become swollen and hard; roseola and other secondary symptoms appear as in other cases. When syphilis begins in the breast, at a time when the genital organs are intact, the origin of the disease is evident. The genital organs are at first free from any lesion, but mucous papules are likely to become developed later on. When, however, these coexist with mucous papules of the breasts, in the infra-mammary folds and not on the nipples, as is sometimes seen, it may be regarded as certain that the nurse did not contract the disease from the child. It must be remembered that the mother may suckle with impunity a child who communicates the disease to a nurse, and that a child suffering from hereditary syphilis some-

times infects one nurse and not another. The state of health of the nurse's own children constitutes important evidence in one or other direction. If these remain perfectly healthy, syphilis in the nurse is rendered unlikely. If the nurse's last-born child is suckled at the same time as the nursling and is found to have become infected, the source of the disease may be predicated with certainty.

3. The questions with regard to syphilis and vaccination have been discussed in a previous chapter (see p. 50).

4. In the case of medical men and midwives who contract the disease in the course of their duties, and subsequently communicate it to other women, discovery seldom takes place until several persons have become affected. Not only the lying-in woman, but her child, and in some cases her husband successively contract the disease. In a recent example of this kind the midwife, with an unhealed sore on her hand, continued to attend women in spite of warnings from medical men. She communicated the disease to several women; in one case the child only was infected, and in three cases the husbands subsequently suffered. The midwife was indicted for having unlawfully and maliciously done grievous bodily harm to the infected women, and was sentenced to twelve months' imprisonment. It was proved that she had not only been warned, but that she had attended at least one case after she had been made aware that others whom she had attended were already suffering from the disease.

5. With regard to symptoms of hereditary syphilis as affording evidence in questions of doubtful identity, such cases are of rare occurrence. The symptoms of hereditary syphilis in young adults have been fully described (see p. 284). The coexistence of notched incisor teeth with corneal opacities constitutes the most decisive evidence.

6 and 7. With regard to the last points mentioned in the first paragraph of this chapter it is well known that syphilis is not invariably communicated during intercourse when one of the parties concerned is suffering from the disease. In actions for divorce, when the defendant is

alleged to have contracted syphilis, the duty of the medical witness will be to determine the truth or falsity of the allegation. For the general diagnosis of syphilis the reader is referred to the chapter on this subject.

Syphilis and Marriage

A question which a medical practitioner frequently has to decide, and one which involves considerable responsibility, is as to whether a person who has once had syphilis but is free from all active manifestations of the disease, may be allowed to marry without undue risk to possible offspring and to the wife? That the child may inherit the disease from its father is universally admitted; that the mother may become infected through the fœtus is believed by the majority of observers. The health of the children and that of the mother are, therefore, in jeopardy, the total exclusion of risk is impossible, and the question in a given case is, what is the amount of the risk to be run? Is it so great as to forbid marriage, or is it so small that marriage may be permitted with almost perfect confidence that no evil results will follow? There are, of course, many intermediate degrees of probability. The surgeon's duty will be to ascertain the facts and to advise the patient as to their bearing and importance.

When a patient, who states that he has had syphilis, seeks advice as to whether he is fit to marry, the first thing to be done is to test the accuracy of his statement. There is such a condition as *syphilophobia*, and it also not unfrequently happens that persons assert that they have been infected with syphilis, whereas they have suffered only from non-infective or harmless sores. In most cases, however, the statement with regard to syphilis is based upon fact, and the practitioner in answering the patient's question will be guided by several considerations. These are mainly two in number, and they refer to the stage of the disease or the interval that has elapsed since infection, and to the

duration and nature of the treatment to which the patient has been subjected.

With regard to the first point, it is of course presumed that the patient's genital organs are free from any active lesion. Traces of induration often remain for months after infection, and a much longer interval generally elapses before the glandular swelling subsides. The penis is also the occasional seat of secondary lesions, the secretions of which are contagious. But even if the genital organs show no signs of disease, manifestations of syphilis may exist in other parts, such as the mouth, and the disease may be directly communicated from these lesions. The existence of any external manifestations of syphilis is prohibitory of marriage. In the absence of any symptoms of this kind it may be laid down that, as a general rule, marriage is permissible, provided that three years have elapsed since infection, and that during two years the patient has been subjected to careful and systematic treatment. *Cæteris paribus,* the longer the interval, the greater the probability that the disease has become so far extinguished that transmission will not take place, but the question is one of probability only. If, however, infection was followed by a two years' course of mercurial treatment, and another year has elapsed without any sign of syphilis appearing, the patient may be regarded as safe. The notion, somewhat widely prevalent, that baths of sulphurous waters are of any value as a test of the existence or non-existence of syphilis, is destitute of any real foundation. The existence of tertiary symptoms shows, as a general rule, that the disease has passed the stage in which transmission is probable. Cases of this kind are not unfrequent. A syphilitic patient marries, being free from all active symptoms, and becomes the father of several healthy children, who never show any sign of syphilis. The father, however, in the course of years presents gummatous ulceration or signs of syphilis in internal organs. It also sometimes happens that a man with decided secondary symptoms begets a healthy child.

The danger to the wife has been fully described in the chapter on hereditary syphilis. It was there pointed out that she may become infected through the fœtus, and that repeated miscarriages are not unfrequent results of such contamination.

The whole subject of syphilis and marriage* has been exhaustively treated by Professor Alfred Fournier, who thus sums up the conditions which a syphilitic subject should satisfy in order to enjoy the moral right of marrying.

1. Absence of actual specific symptoms.
2. Advanced age of the diathesis.
3. A certain period of absolute immunity since the last specific manifestation.
4. The non-menacing character of the disease.
5. A sufficient specific treatment.

* 'Syphilis and Marriage.' By Prof. Fournier. Translated by Alfred Lingard. 1881.

CHAPTER XXVII

THE PREVENTION OF SYPHILIS

The manner in which syphilis is communicated being perfectly understood, and the ravages which the disease causes being only too evident, it might be supposed that, in civilised communities, every endeavour would be made to stamp out a pestilence fraught with such evils to humanity. The widespread prevalence of the disease, however, clearly shows that the means adopted for checking its extension are very inadequate for the purpose.

The possibility of stamping out syphilis can scarcely be disputed, though the difficulties are undoubtedly great and manifold. Strange as the statement may appear, it is more than probable that the frequency with which the disease occurs blinds persons in general to its dangers. As to what that frequency is the medical profession alone, and chiefly those members of it who practise in large towns, have any true conception. A large majority of the young men of the upper and middle classes suffer in youth from some form of venereal disease, and among the lower classes syphilis is terribly common and often very severe.

Such being the actual position with regard to syphilis, it may be asked, Why is the disease thus so common and how does it spread? The answer is definite to a degree. Excluding the hereditary form, syphilis is propagated principally by sexual intercourse; cases in which the disease is acquired in other ways constitute a very small proportion of the entire number. The source of the virus is prostitution, and the questions arise, Can the disease

be checked at its source? or Can the source itself be abolished?

If the second of these questions could be answered in the affirmative, the first would be superfluous. No human means, however, are sufficient to abolish prostitution; a certain amount will go on, but this amount will diminish or increase in proportion to the adequacy or inadequacy of the measures adopted for its control. If things are allowed to take their own course, if, as in London at the present day, prostitutes are allowed to ply their calling in any place they may select, without the slightest interference, the result must be that their number will increase, and that the spread of syphilis will be proportionately facilitated. On the other hand, not only prostitution, but syphilis as well, can be diminished by properly regulated official supervision. It is the duty of the State as the guardian of the public health not only to limit prostitution, but to exercise a careful supervision over an evil which it cannot repress. It is surely necessary that the present system with regard to prostitution should be altered. Prostitutes are now allowed to congregate in all our public places; the various metropolitan and suburban railway-stations are their favourite haunts at the present time. To exclude all prostitutes from the public thoroughfares would be impossible, but solicitation could be prevented, and a large amount of open prostitution would be thereby checked. The objection that the liberty of the subject would be interfered with is met by the consideration that the State does, in many ways, for the public good, interfere with individual liberty. As the late Dr Parkes said:—"In the case of venereal diseases, the State must as much protect its citizens as from the danger of foul water, or the chances of gunpowder explosions, or the risks of any other perilous and unhealthy trade. If men want prostitutes they must go and seek them. If a woman desires to become a prostitute she must know that she will not be allowed to pursue her calling in the public streets or in public places."

It has been shown beyond dispute that official supervision over prostitution has considerably diminished the amount of syphilis in the places where it has been exercised. Such supervision must of course include the detection and cure of the disease in prostitutes. "Secret, unwatched prostitution is far more active in spreading the disease than prostitution which is under control." The difficulty is to detect the disease in prostitutes. In all other European countries an elaborate system is in use for this purpose; brothels are registered and their inmates regularly examined. Such a system is to be considered simply as a precautionary measure; its adoption is not to be regarded as in any way sanctioning prostitution, or even as a recognition of its inevitableness. "A custom exists which we cannot set aside; let us obviate its effects as best we may," hoping that the custom may be gradually removed by other means.

With the object of checking the spread of syphilis in the army and navy the continental plan has been partially adopted in this country; and it is much to be regretted that in the spring of last year the Act in force was shorn of its efficacy by a vote of the House of Commons. It is important to notice the various attempts that have been made to control prostitution. In 1864, the Government passed a Bill, by the provisions of which, in the neighbourhood of certain places (six large naval and military stations), prostitutes found to be diseased were to be taken to a hospital, and kept there till cured. The course of procedure was a cumbersome one. Information had to be given that a woman was diseased, if she then appeared in public for the purpose of prostitution she could be apprehended, examined, and if really diseased sent to a hospital; she could also be followed to a brothel and apprehended. In 1866 another Act was passed, by the provisions of which women known to be common prostitutes were compelled to submit to periodical medical examination, and if found to be diseased, were detained in Lock Hospitals for treatment, until cured. This Act

applied to all the more important naval and military stations, and in some cases to adjoining parishes. The carrying out of the provisions of these Acts resulted in a decided decrease in the number of primary venereal sores at all the military stations under the Act, as compared with those not included in the schedules. In 1878, at fourteen stations under the Act, the admissions for primary venereal sores averaged 40 per 1000, while in fourteen stations not under the Act the admissions reached 86 per 1000 for the same affections. An equal or even greater difference has been observed in other years. As might be expected, not only the frequency but the severity of the disease has been much reduced, as proved by comparing the cases with those observed in unprotected towns and districts. In 1870 an attempt was made to repeal the Act, and a Royal Commission was appointed to report upon its effects. The Report shows most decidedly that the worst forms of the disease had been much reduced among the lower classes of prostitutes, and that the women had also been benefited in an indirect manner. "The Acts have purged the towns and encampments to which they have been applied of miserable creatures, who were mere masses of rottenness and vehicles of disease." The Report further says, "We are satisfied from the evidence that the *frequent examination* of women is the most *efficacious* means of *controlling* the disease."

The Acts continued to be administered and to produce their beneficial effects until the spring of last year, when by a chance-vote of the House of Commons a fatal blow was struck at their efficacy. They were not, indeed, repealed, but a Resolution was carried (April 20), "That this House disapproves of the compulsory examination of women under the Contagious Diseases Acts." The balance of argument was entirely in favour of the maintenance of the Acts in their integrity. The Judge Advocate-General declared that though his vote might jeopardise his seat at another election, he must protest against any attempt to impair the efficiency of a "system

which had done much to check the progress and alleviate the severity of one of the most terrible scourges of humanity, and had also done something to mitigate in its worst forms one of the most baleful as well as the most prevalent vices of modern society." It appeared in the course of the debate that there existed an entire divergence of opinion between different members of the Government on the question of the Acts. The result of the passing of the above Resolution was that orders were at once sent to various military and naval stations, directing the police, hitherto employed in carrying out the provisions of the Acts, to discontinue their operations. The Lock Hospitals will remain, and the power of detaining women *who present themselves* for treatment and are found to be diseased will also continue. As a matter of fact, very few women will present themselves voluntarily; and without compulsory examinations the remaining clauses of the Acts are devoid of any real value. It is to be hoped that another Parliament will rectify the mistake, and that another Government may be found willing to assume responsibility even at the risk of incurring unpopularity among a certain influential but ill-informed class of the community.

Note.—While these pages have been passing through the press, the remarks made in the text have been confirmed in the most decided manner by the experience of my friend Mr Parker Wilson, Surgeon to H.M.'s Military Prison at Brixton. Mr Wilson informs me that since 1st January, 1884, the number of prisoners admitted has been 342, and of this number 79 (23·09 per cent.) were found to be suffering from venereal disease. In 1882 the percentage of these cases was 2·9, and in 1883 (during part of which the Acts were in abeyance) it was 4·5. Mr Wilson goes on to say that many who are infected do not apply for treatment; and that not only has the practical abolition of the Act been followed by an increase in the *number* of cases, but that "the *character* of the disease, which had

become modified, is beginning to assume its old virulent type." The result upon the health of the soldier is obvious; and inasmuch as the men under the short service system are more likely to marry before the disease is eradicated, the propagation of a race of infected offspring is the probable or certain consequence.

CHAPTER XXVIII

THE TREATMENT OF SYPHILIS

The treatment of some of the more prominent lesions of syphilis has been succinctly described in preceding chapters. It now remains to discuss at some length the treatment of syphilis in general, and to point out the indications and contra-indications for the various remedies which are employed. In syphilis, as in all diseases undoubtedly depending upon a specific virus, the objects to be aimed at are to subdue the cause of the disorder, or to eliminate the virus from the system, and to assist the restorative powers of the body in the establishment of healthy function and structure. The treatment best adapted for the attainment of these objects consists in the administration of certain medicines and in the prescription of various hygienic rules.

It is unnecessary to do more than briefly allude to the *expectant treatment* as applied to syphilis. Some of those who still adopt it allow that recourse must be had to medicines, viz. iodide of potassium or mercury, if the symptoms prove to be particularly obstinate. Zeissl,* one of the chief advocates of the expectant method, treats the primary induration with simple local applications. When any eruption appears he gives some preparation of iodine, and if, after this has been persevered with for six weeks, the eruption still remains or any other symptom appears, he prescribes mercury in the form of Zittmann's decoction, or by inunction, or in very rare cases by subcutaneous injection. Such a method, however, appears to be at least illogical.

* 'Lehrbuch der Syphilis,' iv Aufl., S. 669.

Whatever may be the way in which mercury produces its effects, there can be no doubt as to its beneficial action upon the great majority of the *visible* manifestations of syphilis and upon many of the subjective symptoms; and, regarding as I do the induration as a symptom of the contamination of the system—as significant in this respect as a skin-eruption—I firmly believe that the earlier mercurial treatment is adopted after the diagnosis has been established the better will it be for the patient. If, as appears in the highest degree probable, mercury removes or relieves the more prominent "secondary" symptoms, the same remedy ought surely to be adopted in the treatment of the induration, which is *par excellence* the peculiar sign of syphilis.

The Medicines to be relied upon in the treatment of syphilis are mainly two, viz. mercury, in some one or other of its preparations, and iodine, which is generally given in the form of iodide of potassium. There are a few auxiliary remedies, *e.g.* sarsaparilla and guaiacum, more or less useful in certain cases.

For directions for the treatment of the primary induration the reader is referred to the chapter on that subject (see p. 83). As there stated, the most convenient way of administering mercury is by the mouth, and the pil. hydrarg. is the preparation I generally use. The dose is from three to five grains, combined with $\frac{1}{4}$ to $\frac{1}{2}$ gr. of opium night and morning, and the remedy should be continued until a slight effect is produced upon the gums. The time required varies in different cases, but as a general rule some effect is observable in the course of two or three weeks. The patient must be carefully watched, and as soon as the gums become in the least degree tender and swollen, the dose must be reduced or the medicine given only once a day. Care must be taken to avoid salivation, which so far from being necessary is absolutely injurious, partly because it prevents the continuous administration of the medicine.

In the majority of cases, with proper care, the effects of the remedy can be kept up for an almost indefinite time.

Should, however, salivation occur, as indicated by marked tenderness and swelling of the gums, tongue and salivary glands, a coppery taste, fœtid breath, and profuse flow of saliva, the medicine must of course be forthwith discontinued. In order to moderate the symptoms, the patient should take a dose of some active purgative with the view of removing from the bowels any remaining mercury, and should use some astringent and stimulating gargle. Milk forms the best and most pleasant gargle. A good formula often employed is, alum, potassæ chlorat. āā ʒiss, aquæ ʒxij. This should be used every two or three hours, and the mouth cleansed with a soft brush. A gargle composed of one part of brandy to four or five of water is also useful, and if there be much fœtor a drachm of the chlorinated solution of soda may be added to each ounce of the gargle. No internal remedy has any specific power of checking salivation; a little opium may be given to relieve pain and discomfort. After the symptoms have subsided, a short interval should be allowed to elapse before the mercurial course is recommenced. The mercury must then be given very cautiously and in very small doses.

In the large majority of cases, provided that due care be taken, no such disagreeable effects follow the use of the mercury. When given as recommended for the primary induration, absorption of the latter almost invariably begins soon after the least degree of tenderness is felt in the mouth. If the indurated portion be of small dimensions, it will probably disappear in the course of a few weeks; if large, more time will be required, but its ultimate absorption may be confidently predicted.

The administration of mercury as above recommended appears in a few cases to cut short the disease, that is, to prevent any further constitutional manifestations. I have met with several instances of this kind in the course of my practice. In one case, a gentleman, aged 35, presented a well-marked indurated sore, accompanied by indurated and very prominent glands in both groins. Under the

use of blue ointment locally and blue pill internally the sore slowly healed. The mercurial treatment has been continued for a year, and there have been no secondary manifestations whatever. The induration has disappeared, but some enlargement of the glands remains. In the cases of two brothers, lately under my care, intervals of five and seven months respectively have elapsed since infection. Both these patients have been treated with mercury from the beginning, and no eruption or any other symptom has appeared. The treatment is still being continued. In the majority of instances, however, such results are not attained, but it may be regarded as an established fact that the early administration of mercury at least retards the outbreak of additional symptoms, and certainly mitigates the severity of any that may present themselves.

Patients undergoing a course of mercurial treatment should adopt certain precautions, and follow certain rules as to mode of living, &c. Confinement to the house in ordinarily fine weather is by no means necessary. On the other hand it is probable that exercise and fresh pure air tend decidedly to prevent salivation. In the eruptive stage, confinement to the house is desirable, and when any special symptoms are present, such as high fever, iritis, laryngitis, &c., it will be necessary to keep the patient in bed. The patient should live quietly and regularly, should wear warm clothing, and avoid getting chilled. His diet should be plain, but nutritious. Alcohol is to be avoided, but if from any cause stimulants are required, some light wine, such as claret, may be allowed in moderation. It is advisable that the patient, if a smoker, should renounce tobacco while taking mercury. The skin must be kept perfectly clean, and for this purpose a daily tepid bath is desirable. The question as to the influence of a course of warm baths will be presently discussed.

With regard to the *time* during which the mercury should be administered for syphilis, it was stated in a previous page that the course of treatment should extend

over two years. It is not, however, meant that the mercury should be *continuously* administered for this period. It should be given for six months, and then discontinued for a month or six weeks. Another course of three months is then advisable, after which a longer interval may be allowed. A third and a fourth course, with an interval between them of three or four months, will complete the treatment. It is obvious that this plan necessitates a considerable amount of self-control on the part of the patient, and in many cases it cannot be properly carried out. Every effort should, however, be made to induce patients to submit to a thorough course of treatment, and to remain under medical supervision for the time specified.

Other preparations of mercury, and other methods of administering the remedy, require to be briefly noticed. The Hydrargyrum cum Cretâ is useful in those cases in which mercury causes irritation of the bowels. Two or three grains combined with two grains of Dover's powder may be given twice or three times a day. It is especially serviceable in the treatment of hereditary syphilis. It may also be used for adults towards the end of a mercurial course. The subchloride of mercury, calomel, is unsuitable for administration in syphilis generally, except under circumstances in which it is desirable to bring the system rapidly under the influence of the remedy. It must then be combined with opium. The perchloride of mercury has been largely used in the treatment of syphilis since the end of the last century, when it was introduced mainly by Van Swieten. He appears to have suspected that salivation was not requisite for the cure of syphilis, and hence he was desirous of obtaining some mercurial "that might be diluted at will and so tried in a very small dose." He began his experiments with corrosive sublimate, as possessing these properties. This preparation has the advantage of being absorbed by the intestinal canal without undergoing change; other preparations have to be converted into the bichloride in order to be-

come capable of absorption. The dose is from one-twentieth to one-twelfth of a grain twice or three times a day; larger doses are very apt to cause griping and purging. The best mode of using it is in the form of pills made of crumb of bread. "A watery solution of perchloride of mercury readily undergoes decomposition, especially when exposed to solar light; calomel is precipitated and hydrochloric acid set free. This change is facilitated by the presence of organic substances, whereas it is checked by the presence of alkaline chlorides" (Pereira). The solution should always be recently prepared. The biniodide is an efficient substitute for the perchloride, and when dissolved in a watery solution of iodide of potassium it remains unchanged. It is, however, better adapted for the later manifestations of syphilis, such as relapsing papular eruptions, gummatous ulceration, affections of the nervous system, &c.

Inunction is another method by which mercury may be administered, and for this purpose the Unguent. Hydrargyri is the best preparation. Inunction is advisable for those cases in which mercury in any form, and even when combined with opium, disorders the stomach and bowels. The method is, however, disagreeable to most patients; it is also impossible to ascertain the quantity of mercury actually absorbed, and profuse salivation is sometimes rapidly caused. When, however, this method is selected the best plan is to direct the patient to rub every morning a drachm of the blue ointment into the sole of the right and left foot alternately, the foot being washed at night. Absorption is promoted by the warmth and movements of the foot, and the part can be readily cleansed. For patients to whom the marks of blue ointment upon the linen are of no consequence, the application may be made daily to various other parts of the body in turn, such as the inner surfaces of the thighs, sides of chest, back, and inner surfaces of arms and forearms. About a drachm of the ointment should be rubbed in for ten or fifteen minutes; and the rubbing may be done, if neces-

sary, by an attendant whose hand is protected by a glove. The blue ointment is preferable to the oleates of mercury recently introduced. Mercurial ointments rubbed into the skin sometimes produce an eczematous eruption (see page 98) which occasionally persists for a considerable time, and in some cases reappears at long intervals after the remedy has been discontinued.

With regard to the time during which the frictions are to be used, this must depend upon the nature of the case, and the condition of the patient. Signs of salivation must be carefully watched for, and the frictions must be discontinued or used less frequently as soon as the gums are the least swollen or tender. As a general rule, some effect upon the mouth is noticeable after the frictions have been employed for two or three weeks. The diet and manner of living should be such as were recommended in a previous paragraph. Constipation, if present, should be counteracted by the use of mild purgatives, and in debilitated patients, tonics such as quinine, iron, and cod-liver oil may be advantageously combined with the mercurial treatment.

In the large majority of cases of syphilis, the administration of mercury, either internally or by inunction, is followed by subsidence of all local symptoms, and if the patient's health has become impaired, by considerable improvement in the general appearance and condition. It is true that loss of weight is usually one of the first effects of a mercurial course, but this is quickly followed by an increase, sometimes to such a degree that the patient becomes decidedly heavier than before. The number of red corpuscles in the blood is almost invariably increased.

Mercury may also be administered in another manner, namely, by fumigation. This method is peculiarly suitable for the treatment of the cutaneous affections, and it may be combined with the internal administration of the drug. That mercury has a *direct local* action upon the manifestations of syphilis has been proved by the results of the hypodermic injections of the perchloride. In one case, a

confluent papular syphilide upon the shoulder became much paler in colour after the hypodermic injection of the perchloride into its centre, while patches of eruption on other parts of the body remained unaltered. The same result is often seen to follow the use of ointments containing various preparations of mercury.

Fumigation, as a method of administering mercury, dates from the time when syphilis was epidemic. The plan fell into comparative desuetude, until it was revived in this country by Mr Langston Parker. Various preparations of mercury may be used for this purpose; of these calomel is the most convenient, and its vapour may be advantageously combined with steam, so as to form a moist bath. The apparatus required consists of a spirit-lamp placed in a cage of wire-gauze; the central portion of the roof is formed by a plate to hold the calomel, while a metallic trough, to hold water, occupies the circumference. The patient sits on a cane-bottomed chair, and is enveloped in blankets or a cloak made for the purpose. The bath should be taken at bedtime. From ten to sixty grains of resublimed calomel are placed on the central plate; hot water is poured into the circular trough, and the lamp is then lit and the apparatus is placed under the chair. In from fifteen to twenty minutes it will be found that both the calomel and the water have disappeared by evaporation. It is advisable that the patient should open the upper part of the cloak, and inhale the vapour for half a minute or more, three or four times while taking the bath, and that he should go to bed without wiping off the thin layer of calomel deposited on his skin. The bath is to be repeated according to circumstances. In some cases it causes symptoms of weakness and prostration, and when this is the case, it should be used every second or third night. In other cases, no such unpleasant effects are produced, and the patient may take the bath every night and continue it until all symptoms have disappeared. Salivation is very rarely induced. In the absence of any special apparatus, a mercurial vapour-bath can be pre-

pared by sprinkling the calomel on a hot brick, which together with a vessel containing boiling water, is placed under the chair as before. The effect of the baths upon syphilitic skin-affections is generally rapid and satisfactory, but as regards the curative effects of the remedy, this method of administering mercury is far less advantageous than the internal exhibition and the method by inunction. Many of the syphilitic eruptions of the face are very satisfactorily treated by fumigation.

Baths containing a solution of the perchloride of mercury are very rarely used in this country. It may, indeed, be doubted whether any of the mercury is absorbed by the sound skin. Where abrasions or ulcerations exist, absorption will probably take place, but for such cases, the vapour bath constitutes the best method. For children suffering from cutaneous symptoms of hereditary syphilis, the frequent use of a bath containing from twenty to forty grains of the perchloride is often followed by excellent results.

The hypodermic injection of the perchloride or of any other mercurial preparation is not to be recommended, though its advocates claim that it causes a rapid disappearance of syphilitic symptoms. This, however, is by no means equivalent to a cure of the disease, and it has been noticed that recurrences are very prone to occur under the use of this method. The injections of about gr. $\frac{1}{12}$ of the perchloride cause considerable pain, often lasting for some time, and troublesome abscesses are sometimes the result. It is difficult to see what advantage this method possesses, as compared with the internal administration or the method by inunction.

As a matter of course, the directions given above for the use of mercury apply also to cases in which secondary symptoms have appeared and the drug has been withheld, or given in an insufficient quantity.

Certain circumstances contraindicate the use of mercury, while others require that special precautions should be taken. Mercury is not to be given for a primary sore,

unless manifest induration be present. It must, of course, not be given when there is the least symptom of sloughing or phagedæna, and if these complications ensue under its use, it must be immediately discontinued. Mercury should not be given to patients suffering from phthisis in a well-marked form, but the resemblance between the symptoms of this disease and those of syphilitic affections of the lungs (see page 162), must be borne in mind. When the phthisical symptoms are not far-advanced and the patient's general health is tolerably good, mercury need not be withheld, provided that great caution be used. If it appear to aggravate the chest symptoms, iodide of potassium should be substituted for it. Patients suffering from albuminuria, not due to syphilis, are not fit subjects for a mercurial course. Severe salivation is liable to be induced after a few doses of the medicine, which would then have to be discontinued. With regard to scrofula, mercury is, as a general rule, badly borne by the subjects of this condition. If, however, the symptoms of syphilis are severe, while those of scrofula are not very prominent, mercury may be given tentatively and in small doses. The biniodide, dissolved in solution of iodide of potassium, is a very suitable preparation for these cases. Tonics, especially cod-liver oil and iron, should be given at the same time. If the mercury aggravates the symptoms of scrofula, iodide of potassium must be substituted for it. In very anæmic subjects suffering from syphilis, caution is necessary in administering mercury. If, however, the condition is due to syphilis, it will certainly be improved by mercury, the use of which, in small doses, has been shown to increase the number of red corpuscles in syphilitic patients. In such cases the improvement in the appearance of the patient will proceed *pari passu* with that of the symptoms of the disease. If the anæmia be due to organic disease, to malarious fever, dysentery, &c., or to incautious use of mercury at a previous time, the iodide of potassium, combined with tonics, must be substituted for mercurials. In the last place, it must be remembered that

some patients are very prone to become salivated, even with very small doses of mercury, and in the absence of any obvious cause for this peculiarity. Several well-authenticated cases have been placed on record proving that severe ptyalism may be caused by a few grains of any mercurial preparation.

It remains now to describe the local mercurial treatment of the manifestions of syphilis. This is altogether subordinate to the general treatment, but local applications often accelerate the disappearance of the cutaneous and mucous lesions. Directions have already been given for the local treatment of the primary sore, of condylomata and of syphilitic affections of the mouth and nose. The milder cutaneous eruptions almost invariably subside under constitutional treatment.

The mercurial vapour bath is especially suitable for cases in which the eruptions prove obstinate, and particularly when the face is affected. Calomel ointment (made with *precipitated* calomel), or the Unguent Hydrarg. Nitrat. may be applied to chronic papular eruptions; and the so-called "psoriasis" of the palms and soles requires frequent soaking in warm water, and, after thorough drying, the application of either of the above ointments, or of the Unguent Hydrarg. Oxid. Rub. Pustular eruptions, unless very severe, require no local treatment, beyond being protected from irritation. When scabs and crusts form, one of the ointments mentioned above may be applied. In severe cases, the scabs or crusts should be removed by sponging with warm water, or by bread poultices, and *finely-powdered* iodoform should then be applied on a soft brush. Secondary and tertiary ulceration, due to syphilis, requires particular local treatment. When the ulcers are small and scattered, the red ointment is the most suitable application. If they are very painful, they should be dusted over with iodoform, reduced to an extremely fine powder. Serpiginous ulceration may be treated in the same way. The ulcers left after the detachment of rupial crusts should be dressed

with the red ointment ; and if profuse granulations spring up, nitrate of silver should be applied. Cutaneous gummata should be covered with mercurial ointment, or the red ointment, in order to promote absorption. If, however, disintegration takes place and fluctuation becomes perceptible, it is best to allow the swelling to open spontaneously. When the contents have been discharged, some one of the above-mentioned ointments may be applied to the opening, and if an ulcer results, iodoform should be dusted over it. When the base of such an ulcer is indolent and foul, and shows no disposition to heal, it should be painted over several times with a solution of carbolic acid, one part to four of water. As a matter of course, constitutional treatment must at the same time be continuously persevered with.

As a general rule, the primary and secondary stages of syphilis require mercurial treatment, while the iodide of potassium is the main remedy to be relied on for dealing with the tertiary symptoms and visceral lesions. It is also useful for some of the manifestations of the secondary stage, especially the late pustular eruptions and the various affections of the bones. Its effects, however, though more rapidly produced than those of mercury, are, as a general rule, less permanent. A combination of the two remedies is also sometimes more efficacious than either used separately.

The iodide of potassium is given internally in solution, or in the form of pills, and it may also be administered by the rectum. Iodine itself is seldom given internally, but its external application, in the form of tincture or liniment, is useful for glandular enlargement and superficial affections of the bones and periosteum. When taken internally, the iodide is very rapidly absorbed into the blood, and it soon appears in the various secretions and excretions. The ordinary dose is from five to fifteen grains, and it is well to begin with a comparatively small quantity, and to increase it, when necessary, by the daily addition of two or three grains to each dose. In cases of disease of the bones, of obstinate cutaneous or mucous ulceration and of

syphilitic affections of the nervous system, it is often necessary to prescribe large doses, such as three drachms or even more daily. The good effects of the iodide are increased by the addition of a few grains of carbonate of ammonia to each dose. Seltzer water, or some effervescing combination, forms the best vehicle for the large doses, which should be administered, well diluted, after food. It sometimes occasions nausea, vomiting, pain and heat in the stomach, purging, and symptoms of nasal catarrh; and in some persons very small doses suffice to produce these symptoms. The nasal catarrh is the most common; it is accompanied by frontal headache, lachrymation, œdema of the neighbourhood of the orbit, swelling of the nostrils, and occasionally by the development of a papular or vesicular eruption on the face and neck. Severe œdema of the glottis, necessitating tracheotomy, is the most serious symptom that has been noticed. In other cases it produces a petechial rash, and in others an eruption of bullæ. In addition to these obvious results, iodide of potassium sometimes causes much bodily and mental depression, loss of appetite and feelings of general discomfort, and these symptoms may occur in the absence of gastric irritation or nasal catarrh. All these unpleasant effects can best be obviated by administering the drug in the manner above described; and if the symptoms are still troublesome, the iodide of ammonium or sodium should be tried. In cases where the stomach refuses to tolerate the iodides in any form, they may be administered by the rectum in doses of twenty or thirty grains, dissolved in an ounce of thin mucilage. As a general rule, however, if proper precautions be observed, the iodide of potassium, even in very large doses, is well borne by the patients; and its effects upon severe pustular eruptions, rupia, severe ulceration of the throat, bony lesions and cerebral symptoms are generally rapid and satisfactory in the highest degree. Whether iodide of potasium can be said to possess any curative power over syphilis is extremely doubtful; it has no effect upon the primary

induration and the earlier secondary symptoms; on the other hand, the longer the disease has lasted, the greater the power of the iodide over its manifestations.

There are but few contraindications to the use of iodide of potassium. It may be given in all cases in which its use is advisable, unless the symptoms it produces are so severe as to necessitate its discontinuance. It is often administered to patients after a course of mercury, and salivation is sometimes induced in these cases. When mercury is given for any considerable period it is deposited in an insoluble form in the structures of the body; iodide of potassium redissolves the mercury, which again passes into the circulation and produces its effects upon the system. If much mercury has been deposited in the tissues, salivation is very likely to be produced. The iodide by itself has been known to produce salivation in a few cases.

With regard to the combinations of mercury and iodine, they are especially indicated for the later secondary and the tertiary stages. The green iodide has been recommended for the primary induration, but inasmuch as iodine eliminates mercury from the system, it seems undesirable to give it in any form when the constitutional effects of mercury are sought to be attained. In scrofulous subjects, however, the combination of the biniodide of mercury with iodide of potassium is frequently advisable; a similar combination is often serviceable in relapsing cutaneous affections, and in obstinate tertiary lesions, upon which the iodide of potassium alone makes no impression, although given in full doses. I have sometimes given Donovan's solution, but have not had much success with it. The chloride of gold is sometimes useful in cases of obstinate tertiary symptoms. In lesions of the nervous system, due to syphilis, it is often advisable to combine the bromide with the iodide of potassium. In cases in which anæmia and debility are well-marked symptoms in a syphilitic subject, various tonics, such as cod-liver oil, iron and bark, may be given during a course of the iodide.

The diet should be of a nutritious character, stimulants in moderation may be allowed, and efforts should be made to improve the patient's general health in every possible way.

Certain vegetable decoctions have been much lauded from time to time in the treatment of syphilis. The best known medicines of this class are sarsaparilla and guaiacum. With regard to the former, the decoction is a useful vehicle for the iodide of potassium ; but it appears, in some cases, to exercise a specific action of its own. In several cases of syphilitic ulceration of the tongue, under my care, speedy improvement followed the administration of large doses of decoction of sarsaparilla, the iodide having been productive of little or no benefit. The decoction must be given in large quantities, viz. from one to two pints in the twenty-four hours. The guaiacum mixture is useful in the chronic syphilitic affections of the bones and joints, accompanied by pains resembling those of rheumatism. It may be given with the iodide of potassium. It is worthy of notice that in the 16th, 17th and 18th centuries, guaiacum was regarded as a specific for syphilis. The patient was, however, very carefully prepared for the administration of the remedy ; the action of the skin was vigorously promoted, purgatives were administered, and the diet was restricted ; and it is probable that the good effects were mainly due to these measures. Quite recently the fluid extract of Stillingia (queen's delight) has been recommended by Dr Marion Sims ;* and it has been found very serviceable in several cases in the Female Lock Hospital, London.

In addition to the strictly medicinal treatment of syphilis, there are other therapeutic measures which demand a brief description, and which constitute more or less valuable auxiliaries. The importance of suitable diet, fresh air, a moderate temperature, a due amount of exercise and the careful avoidance of all injurious influences, cannot be too strongly insisted upon. The mischievous

* 'British Medical Journal,' March 10th, 1883.

effects of alcoholic excesses have been already referred to, and it is not too much to say that a patient who observes all the rules of hygiene, but takes no medicines, has far better chances of recovery from syphilis than one who freely swallows mercury and the iodide, and at the same time indulges freely in alcohol and leads a dissipated life in other respects. The elimination of the syphilitic virus requires that all the functions of the body should be in the healthiest possible condition, and the effects of the medicinal treatment are materially assisted by promoting excretion from the skin. Vapour-baths and warm-water baths are the principal means for attaining this object.

Certain mineral waters have enjoyed a considerable reputation in the treatment of syphilis, and those containing sulphur have been regarded as the most efficacious. Several virtues have been attributed to these springs. They have been considered as directly curative of syphilis; they have been credited with the power of removing mercury from the system; and, lastly, with that of awakening and bringing to the surface latent syphilis. The possession of this last property has caused the use of these waters to be regarded as a test of the completeness or otherwise of a cure in any given case. The most noted springs of this kind are those of Aix-la-Chapelle, Barèges, Bagnères de Luchon, and Aix-en-Savoie, and the patients drink as well as bathe in the waters. There is, however, no sufficient evidence that water containing sulphur has any special action upon syphilis, or that its effects differ in any way from those of ordinary water. Warm baths increase the perspiration and cause increased activity of tissue-change, and in this way are useful adjuvants in the treatment of syphilis. It must be remembered that at Aix-la-Chapelle and similar bathing places, mercurials and the iodide of potassium are freely used while the patient is undergoing a course of bathing, and it is in the highest degree probable that the beneficial effects observed are mainly due to the medicinal treatment. It is claimed,

however, that the thermal treatment successfully combats syphilitic affections by giving new properties to iodine and mercury. Where pain in the bones is a prominent symptom, considerable relief is often obtained after a few baths at Aix-la-Chapelle and elsewhere, but ordinary warm baths would be equally efficacious in this respect. It is also certain that sulphur-baths do not possess the power of unmasking the latent effects of syphilis, for it has been shown that only in a minority of cases do relapses occur during the course of bathing. Whether the internal and external use of sulphur-waters aids in the elimination of mercury from the system has not been definitely settled. The claim to another property, viz. that of preventing too active effects from the remedy by rendering inactive the excess of mercury administered, can only be regarded as imaginary. While admitting the benefits likely to be derived from warm baths as auxiliaries to medicinal treatment, the author believes that it is quite unnecessary to send patients to Aix-la-Chapelle or other thermal sulphur-springs for the sake of the baths.

With regard to hydropathic treatment, it is sometimes useful in cachectic conditions, whether dependent or not upon syphilis, and complicating its symptoms. The patient's general health is often improved under a mild course of hydropathy, metamorphosis of tissue is excited, the skin becomes more active, and the appetite is increased. These results, together with the regimen prescribed, are extremely advantageous for the patient and increase his prospects of recovery. The bracing and depurating effects of the Turkish bath are well seen in many cases of syphilis. Its good effects are demonstrated by the rapid recoveries from syphilis, often witnessed by the author in the cases of persons, attendants in Turkish baths. The disease, moreover, always assumes a mild type in these patients.

For the sake of completeness, and also because the subject possesses some amount of historical interest, a brief reference to the method of treating syphilis, miscalled "syphilisation," may not be out of place. The method

in question owes its origin to some experiments performed by Auzias Turenne, the results of which were communicated to the Paris Academy of Science in 1850.* M. Turenne inoculated the secretion of ulcers *supposed* to be syphilitic upon animals and upon the human subject, and he found that after the operation had been more or less frequently repeated upon the same subject, the inoculation failed to produce any effect. He was led to believe that persons might thus be rendered insusceptible of syphilis; the inoculations, sufficiently often repeated, were regarded as *prophylactic*. A few months later Dr Sperino,† of Turin, proposed to apply this method to the *treatment* of constitutional syphilis. The idea of preventive syphilisation was soon discarded; but the method was practised for some time with a view of curing the disease. The whole proceeding, however, is based upon error. It has been shown to demonstration that the secretion from a *syphilitic* sore is not inoculable *as such* upon the bearer of it. The result is either negative, or the production of a sore resembling a soft chancre. Pseudo-syphilitic sores are of course auto-inoculable, and repeated crops of ulcers may be produced by successive inoculations from the sores thus caused. Immunity is at last obtained, that is to say, no new sore makes its appearance. It must be observed that there is no incubation-period in connection with these sores; and further, that they are utterly unlike the typical hard sore. It is not the virus of syphilis which is inoculated. The method is now practised only in Norway, where the late Dr Boeck, of Christiania, was its warmest advocate. Some years ago Dr Boeck came over to this country and was allowed to exhibit his method on many patients in the Lock Hospital. He failed, however, to convince those who watched his practice and its results, that the method was for any reason worthy of adoption. Even those who were inclined to give it a trial were forced to believe that it had no curative effect upon the disease,

* 'Lettre à l'Académie des Sciences,' 18th November, 1850.

† 'Communication à l'Académie de Médecine de Turin,' 23rd May, 1851.

while its drawbacks, viz. the length of time required, the pain often caused by the ulcers and the unsightly scars which remained, were undeniable and serious. If it possesses any therapeutic powers, these are due to the revulsive or derivative action of the ulceration.

INDEX

PAGE

Abortive treatment of chancre . 83
Acne-form syphilide . . . 106
Africa, syphilis in . . . 14
Age as affecting course of syphilis 23
Aitken, Dr, on endoarteritis syphilitica 170
Alcohol and syphilis . . 24, 239
Allingham, Mr, on syphilis of the rectum 153
Alopecia, syphilitic . . . 119
America, syphilis in . . . 14
Aneurism and syphilis . . . 168
Angina, acute syphilitic . . 127
Aphasia, syphilitic . . . 232
Arteries, cerebral, syphilis of . 226
Arteritis, syphilitic . . . 165
Asiatic countries, syphilis in . 13
Atheroma, syphilis and . . 169
Atrophy of bones in syphilis . 175
— of the optic nerve . . 217

Bassereau's theories with regard to syphilis 30
Baths, use of, in syphilis . . 331
Beale, Dr, on the virus of syphilis 44
Blood-vessels, syphilis of . . 165
Boeck, Dr, and syphilisation . 333
Bones, affections of the . . 173
Brain, syphilitic affections of the . 223
Bronchitis, syphilitic . . . 162
Buboes 62
— complications . . . 65
— diagnosis 66
— method of treating . . 71
Bullæ of pemphigus in hereditary syphilis 276
Bumstead, Dr, on Colles' law . 267
— on infection of the child through the utero-placental circulation 270
Bursæ, affections of . . . 184

PAGE

Caries, syphilitic 176
Cartilages, syphilitic affections of the 185
Caustics, use of, for soft sores . 67
Cerebral syphilis 223
Chancre, hard 75
— complications . . . 79
— condition of ganglia in . 87
— diagnosis of 81
— duration of 78
— forms assumed by . . 75
— in the female . . . 82
— induration in . . . 77
— minute anatomy of . . 80
— number 75
— parts on which most common 75
— secretion 77
— symptoms 76
— termination 78
— treatment of . . . 83
Chancre, soft (chancroid, pseudo-syphilis) 54
— complications . . . 59
— condition of glands . . 62
— development of . . . 54
— diagnosis of 57
— frequency of . . . 54
— minute anatomy of . . 59
— number 55
— parts in which found . . 56
— secretion of 55
— symptoms 54
— termination 56
— treatment 67
Chiari Dr, on gummata in the long bones 177
China, syphilis in . . . 2
Choroid, affections of the . . 210
Circulatory organs, affections of . 164
Colles' law 264
Colour of syphilitic eruptions . 95

PAGE
Condylomata 102
Conjunctiva, affections of the . 202
Constitutional symptoms of syphilis 90
Contagious Diseases Acts . . 312
Copaiba, eruption caused by . 98
Cornea, affections of the . . 203
Cornil, anatomy of gummata . 112
— on the virus of syphilis . 45
Corona Veneris 99
Coryza, in hereditary syphilis . 283
Coulson's, Mr, case of syphilis of the pharynx 131
Course and symptoms of syphilis . 17
Cranial bones, syphilis of the . 178
Curability of syphilis . . 28, 254

Danielssen's experiments . . 32
Deafness due to syphilis . 221, 286
Diagnosis, general, of syphilis . 255
Diday on latent hereditary syphilis 274
Digestion, syphilitic affections of the organs of 148
Duality theory, the . . . 35
Dura mater, syphilis of the . . 227

Ear, affections of. . . . 220
— — in hereditary syphilis . 286
Ecthyma-form of syphilide . . 109
Endoarteritis due to syphilis . 170
Epidemic of syphilis in 1495 . 5
Epididymitis, syphilitic . . 197
Epilepsy, syphilitic . . . 233
Eruption-fever in syphilis . . 92
Erysipelas, as a complication of visceral syphilis . . . 29
— effect of, on syphilides . . 298
Erythematous syphilide . . 96
Europe, syphilis in . . . 11
Excision of chancres . . . 84
Exostoses, syphilitic . . . 179
Expectant treatment of syphilis . 316
Eye, syphilitic affections of . . 200
— — in hereditary syphilis . 284
Eyelids, affections of the . . 201

Fever, syphilitic 92
Fingers, affections of the . . 183
Fournier on syphilis and marriage 309
— on syphilis of the rectum . 152
— on syphilitic bursitis . . 185
Fumigation, mercurial . . 322

Galloping or malignant syphilis . 246
PAGE
Gangrene as a complication of chancre 59
Gardien on infection of the mother through the fœtus . 264
Gascoyen on syphilitic re-infection 253
Genital organs, secondary and tertiary affections of the . . 191
Geographical distribution of syphilis 11
Glands, inflammation of, as a consequence of soft sores . . 62
Glandular induration as a symptom of syphilis . . 87, 90
Gout, syphilis and . . . 298
Greek and Roman writers on syphilis 2
Gummata . . . 24, 111, 227

Habits of the patient as influencing the course of syphilis . . 259
Hair, affections of the . . . 119
Heart, syphilis of the . . . 164
Hereditary syphilis . . . 262
— diagnosis of 292
— infection of the child through the utero-placental circulation . 270
— infection of the mother through the fœtus . . . 264
— influence of the father . . 263
— — of the mother . . . 268
— latency of the symptoms . 272
— prognosis of 294
— symptoms of. 274
— affections of the bones . . 287
— — ears. 286
— — eyes and teeth . . . 284
— — internal organs . . 290
— — mucous membranes . . 281
— — nervous system . . 291
— — skin. 276
— treatment of 295
Heubner, syphilis of the cerebral arteries 166, 226
Hot baths for phagedænic chancres 69
Hunter's views as to identity of syphilis and gonorrhœa . . 10
Hutchinson on keratitis in inherited syphilis . . . 203
— on the teeth in inherited syphilis 286
Hygiene, importance of, in syphilis 330
Hypodermic use of mercury in the treatment of syphilis . . 324

Impetigo-form of syphilide . . 108
Incubation of syphilis . . . 19

PAGE

Indurated glands in syphilis. . 87
— constancy of occurrence . 87
— course and induration . . 88
— seat 87
— symptoms 88
— time of occurrence . . 88
— treatment 89
Induration of chancre . . . 75
— minute anatomy of . . 80
Intestines, syphilis of the . . 150
Inunction, mercurial . . . 321
Iodide of potassium in syphilis . 327
— — methods of administering 328
Iodism 328
Iodoform as a dressing for soft sores 67
— — syphilitic ulceration . 326
Iris, affections of, in acquired syphilis 205
— — hereditary syphilis . . 284

Jews, syphilis among the . . 3
Joints, syphilitic affections of the . 181

Kaposi on the minute anatomy of the soft and hard sores . 59, 80
— — unity theory . . . 34
Kassowitz on the infection of the mother through the fœtus . 266
Keratitis, syphilitic . . . 204
Keratosis of the tongue . . 135
Kidneys, syphilitic affections of the 160

Lachrymal passages, syphilitic affections of the . . . 146
Lancereaux on syphilis of the joints 182
— — ovaries 198
— — pancreas 160
Larynx, syphilitic affections of the 139
— catarrh of the . . . 139
— gummata of the . . . 140
— mucous papules . . . 139
— ulceration of the . . . 141
Latent hereditary syphilis . . 272
Leprosy and syphilis . . . 3
Liver, syphilitic affections of the . 155
Locomotor ataxy and syphilis . 242
Lostorfer's corpuscles . . . 44
Lublinski, Dr, cases of syphilis of the œsophagus 149
Lungs, syphilis of the . . . 162
Lymphatics, induration of in syphilis 87

Mackenzie, Dr Morell, case of syphilitic stricture of the œsophagus 149

PAGE

Malignant syphilis . . . 246
Marriage, syphilis and . . . 307
Meningitis, syphilitic . . . 225
Mercury in the treatment of syphilis 83, 317
Middle Ages, syphilis in the . 5
Midwives, syphilis communicated by 306
"Mixed chancre" . . . 32
Mortality in acquired syphilis . 28
— hereditary syphilis . . 294
Mouth, affections of the . . 126
Mucous membranes, syphilitic affections of the . . . 123
Mucous patches . . . 102, 124
Muscles, affections of the . . 186

Nails, affections of the . . . 119
Nature of syphilitic virus . . 43
Necrosis due to syphilis . . 176
Nervous system, syphilitic affections of the 223
— classification . . . 223
— dura mætr, and brain, gummata of 227
— rupia, often a forerunner of 26, 69, 224
— symptoms of . . . 26, 224
— syphilis of the brain . . 227
— — cerebral arteries . . 226
— — cord 240
— — nerves 244
— treatment . . . 239, 244
Neuritis, optic, as a result of syphilis 215
Nodes, syphilitic 178
Nose, syphilis of the . . . 144

Œsophagus, syphilis of the . . 148
Onychia in acquired syphilis . 121
— hereditary syphilis . . 281
Optic nerves, affections of the . 215
Orchitis, syphilitic . . . 195
— diagnosis 196
— symptoms 196
— treatment 197
Osseous syphilitic lesions . . 175
Osteo-myelitis, syphilitic . . 177
Ovaries, syphilis of the . . 198
Ozæna, syphilitic 145

Pancreas, syphilis of the . . 160
— affections of the, in hereditary syphilis 290
Papular syphilitic eruptions . 98
— the lenticular . . . 99
— the miliary 104

PAGE
Paralysis as a result of syphilis . 231
— of the muscles of the eye in syphilis 218
Paraphymosis as a complication of chancre 62
Parchment induration of chancre . 82
Parkes, Dr, on prevention of syphilis 311
— syphilis and aneurism . . 169
Paronychia, syphilitic . . . 120
Parrot on hereditary syphilis of the bones 288
Pemphigus, in hereditary syphilis 276
Penis, secondary and tertiary lesions of 190
Periostitis, syphilitic . . . 172
Peyer's glands, lesions of, in hereditary syphilis 290
Phagedæna as a complication of chancre 60
Pharynx, syphilitic affections of the 130
Phymosis as a complication of chancre 61
Pia mater, syphilis of the . . 225
Pick, Prof., inoculation of syphilitic subjects with simple pus . 40
Pigmentary syphilide . . . 117
Prevention of syphilis . . . 310
Prognosis of syphilis . . . 257
Pseudo-syphilis 54
Psoriasis, syphilitic, of the palms and soles 101
— of the tongue . . . 135
Psychical disorders in cerebral syphilis 235
Pustular syphilides . . . 105
— acne-form 106
— ecthyma-form . . . 109
— impetigo-form . . . 108
— variola-form . . . 107

Rape, syphilis in cases of . . 303
Rectum, syphilis of the . . 151
Re-infection, syphilitic . . 252
Respiratory organs, affections of the 162
Retinitis syphilitica . . . 213
Rickets, syphilis and . . . 301
Ricord, views as to nature of syphilis 33
Rollet, theory of syphilis . . 31
Roseola syphilitica . . . 96
Rupia syphilitica . . . 115
— a frequent precursor of nervous disorders . . . 26, 224

PAGE
Salivation, treatment of . . 318
Sarcocele, syphilitic . . . 196
Scleritis, syphilitic . . . 203
Sclerosis of the tongue . . 135
Scrofula and syphilis . . . 301
Serpiginous phagedæna . . 61
Sloughing phagedæna . . . 61
Soft chancre, pseudo-syphilis . 54
Spinal cord, syphilis of the . . 210
Spleen, syphilis of the . . 160
Stages of syphilis . . . 26
Stomach, syphilis of the . . 150
Stricture, syphilitic, of the œsophagus 148
— — of the rectum . . . 151
Sulphur-baths in syphilis . 331
Synovitis, syphilitic . . . 181
Syphilis and aneurism . . . 168
— and vaccination . . . 47
— course and symptoms of . 17
— definition of term . . 17
— diagnosis of 255
— frequency and spread of, conditions influencing . . . 15
— geographical distribution of . 11
— hereditary 262
— history of 1
— incubation-periods of . . 19
— influence of, upon diseases in general 297
— influence of upon wounds . 299
— modes of communication . 48
— nature of 43
— origin of the term . . 17
— prognosis of 257
— reinfection with . . . 252
— relation of, to other diseases . 297
— sources of contagion . . 47
— stages of 26
— treatment . . . 83, 316
— — duration of . . . 319
— — hydropathy . . . 331
— — hygienic 330
— — iodine and its compounds 327
— — mercurial . . . 316
— — — effects of . . . 318
— — — fumigation . . 322
— — — hypodermic . . 324
— — — internally . . 83, 317
— — — inunction . . . 321
— — syphilisation . . . 332
— — vegetable remedies . . 330
Syphilitic bubo 87
— fever 92
— skin affections . . . 94
— — classification . . . 94

PAGE

Syphilitic skin affections, course and characteristics . . . 95
— — diagnosis . . . 95
— — erythematous . . . 96
— — local treatment of . . 326
— — gummatous . . . 111
— — papular 98
— — pustular 105
— — rupial 115
— — tubercular . . . 111
Syphilisation 332

Tarnowski, experiments as to the effects of caustics on the skin of syphilitic subjects . . . 300
Taylor, Dr R. W., on *de novo* origin of soft sores . . . 42
Teeth in hereditary syphilis . . 284
Tendons, syphilitic affection of the 189
Testicle, syphilis of the . . 195
Throat, syphilitic affections of the 126
Thymus gland, affections of the, in hereditary syphilis . . 292
Tongue, affections of the . . 133
Trachea, syphilitic disease of the . 141
Treatment of syphilis . . 83, 316
Tubercular syphilide . . . 111
Tuberculosis and syphilis . . 298
Tympanum, syphilitic lesions of the 220

Ulcerating syphilide . . . 113
Unity theory of syphilis . . 33
Uterus, syphilis of the . . . 198

PAGE

Vaccino-syphilis 50
Vagina, secondary and tertiary affections of the . . . 190
Variola-form syphilide . . . 107
Vehicles of the syphilitic virus . 47
Veins, syphilitic disease of the . 171
Virchow on syphilitic infection . 19
— — endarteritis . . . 166
— — necrosis 176

Wegener, hereditary syphilis of the bones 288
West, Mr J. F., syphilitic stricture of the œsophagus . . . 148
West Indies, supposed home of syphilis 6
Wet-nurses, syphilis communicated by and to . . . 304
Wigglesworth, Dr, experiments with the inoculation of non-specific pus 41
Wounds as affected by syphilis . 299

Yaws, epidemic of, resembling syphilis 8

Zeissl, expectant treatment of syphilis 316
— on latent syphilis . . . 273
— on mortality from syphilis . 28
— on syphilis of the rectum . 153
— on syphilitic infection . . 20

PRINTED BY J. E. ADLARD, BARTHOLOMEW CLOSE.

Catalogue B]

London, 11, *New Burlington Street*
October, 1885.

SELECTION

FROM

J. & A. CHURCHILL'S GENERAL CATALOGUE

COMPRISING

ALL RECENT WORKS PUBLISHED BY THEM

ON THE

ART AND SCIENCE OF MEDICINE

N.B.—As far as possible, this List is arranged in the order in which medical study is usually pursued

J. & A. CHURCHILL publish for the following Institutions and Public Bodies:—

ROYAL COLLEGE OF SURGEONS.

CATALOGUES OF THE MUSEUM.

Twenty-three separate Catalogues (List and Prices can be obtained of J. & A. CHURCHILL).

GUY'S HOSPITAL.

REPORTS BY THE MEDICAL AND SURGICAL STAFF.

Vol. XXVI., Third Series (1883). 7s. 6d.

LONDON HOSPITAL.

PHARMACOPŒIA OF THE HOSPITAL. 3s.

CLINICAL LECTURES AND REPORTS BY THE MEDICAL AND SURGICAL STAFF. Vols. I. to IV. 7s. 6d. each.

ST. BARTHOLOMEW'S HOSPITAL.

CATALOGUE OF THE ANATOMICAL AND PATHOLOGICAL MUSEUM. Vol. I.—Pathology. 15s. Vol. II.—Teratology, Anatomy and Physiology, Botany. 7s. 6d.

ST. GEORGE'S HOSPITAL.

REPORTS BY THE MEDICAL AND SURGICAL STAFF.

The last Volume (X.) was issued in 1880. Price 7s. 6d.

CATALOGUE OF THE PATHOLOGICAL MUSEUM. 15s.

SUPPLEMENTARY CATALOGUE (1882). 5s.

ST. THOMAS'S HOSPITAL.

REPORTS BY THE MEDICAL AND SURGICAL STAFF.

Annually. Vol. XI., New Series (1882). 7s. 6d.

MIDDLESEX HOSPITAL.

CATALOGUE OF THE PATHOLOGICAL MUSEUM. 12s.

ROYAL LONDON OPHTHALMIC HOSPITAL.

REPORTS BY THE MEDICAL AND SURGICAL STAFF.

Occasionally. Vol. X., Part III. (August, 1882). 5s.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

TRANSACTIONS.

Vol. II. (1881-2). 12s. 6d.

MEDICO-PSYCHOLOGICAL ASSOCIATION.

JOURNAL OF MENTAL SCIENCE.

Quarterly. 3s. 6d. each, or 14s. per annum.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

PHARMACEUTICAL JOURNAL AND TRANSACTIONS.

Every Saturday. 4d. each, or 20s. per annum, post free.

BRITISH PHARMACEUTICAL CONFERENCE.

YEAR BOOK OF PHARMACY.

In December. 10s.

BRITISH DENTAL ASSOCIATION.

JOURNAL OF THE ASSOCIATION AND MONTHLY REVIEW OF DENTAL SURGERY.

On the 15th of each Month. 6d. each, or 7s. per annum, post free.

A SELECTION

FROM

J. & A. CHURCHILL'S GENERAL CATALOGUE,

COMPRISING

ALL RECENT WORKS PUBLISHED BY THEM ON THE ART AND SCIENCE OF MEDICINE.

N.B.—*J. & A. Churchill's Descriptive List of Works on Chemistry, Materia Medica, Pharmacy, Botany, Photography, Zoology, the Microscope, and other Branches of Science, can be had on application.*

Practical Anatomy:
A Manual of Dissections. By CHRISTOPHER HEATH, Surgeon to University College Hospital. Sixth Edition. Revised by RICKMAN J. GODLEE, M.S. Lond., F.R.C.S., Demonstrator of Anatomy in University College, and Assistant Surgeon to the Hospital. Crown 8vo, with 24 Coloured Plates and 274 Engravings, 15s.

Wilson's Anatomist's Vade-Mecum. Tenth Edition. By GEORGE BUCHANAN, Professor of Clinical Surgery in the University of Glasgow; and HENRY E. CLARK, M.R.C.S., Lecturer on Anatomy at the Glasgow Royal Infirmary School of Medicine. Crown 8vo, with 450 Engravings (including 26 Coloured Plates), 18s.

Braune's Atlas of Topographical Anatomy, after Plane Sections of Frozen Bodies. Translated by EDWARD BELLAMY, Surgeon to, and Lecturer on Anatomy, &c., at, Charing Cross Hospital. Large Imp. 8vo, with 34 Photolithographic Plates and 46 Woodcuts, 40s.

An Atlas of Human Anatomy.
By RICKMAN J. GODLEE, M.S., F.R.C.S., Assistant Surgeon and Senior Demonstrator of Anatomy, University College Hospital. With 48 Imp. 4to Plates (112 figures), and a volume of Explanatory Text, 8vo, £4 14s. 6d.

Surgical Anatomy:
A series of Dissections, illustrating the Principal Regions of the Human Body. By JOSEPH MACLISE. Second Edition. 52 folio Plates and Text. £3 12s.

Medical Anatomy.
By FRANCIS SIBSON, M.D., F.R.C.P., F.R.S. Imp. folio, with 21 Coloured Plates, 42s.

Anatomy of the Joints of Man.
By HENRY MORRIS, Surgeon to, and Lecturer on Anatomy and Practical Surgery at, the Middlesex Hospital. 8vo, with 44 Lithographic Plates (several being coloured) and 13 Wood Engravings, 16s.

Manual of the Dissection of the Human Body. By LUTHER HOLDEN, Consulting Surgeon to St. Bartholomew's Hospital. Edited by JOHN LANGTON, F.R.C.S., Surgeon to, and Lecturer on Anatomy at, St. Bartholomew's Hospital. Fifth Edition. 8vo, with 208 Engravings. 20s.

By the same Author.

Human Osteology.
Sixth Edition, edited by the Author and JAMES SHUTER, F.R.C.S., M.A., M.B., Assistant Surgeon to St. Bartholomew's Hospital. 8vo, with 61 Lithographic Plates and 89 Engravings. 16s.

Also.

Landmarks, Medical and Surgical. Fourth Edition. 8vo. [*In the Press.*

The Student's Guide to Surgical Anatomy. By EDWARD BELLAMY, F.R.C.S. and Member of the Board of Examiners. Third Edition. Fcap. 8vo, with 81 Engravings. 7s. 6d.

The Student's Guide to Human Osteology. By WILLIAM WARWICK WAGSTAFFE, late Assistant Surgeon to St. Thomas's Hospital. Fcap. 8vo, with 23 Plates and 66 Engravings. 10s. 6d.

The Anatomical Remembrancer; or, Complete Pocket Anatomist. Eighth Edition. 32mo, 3s. 6d.

Diagrams of the Nerves of the Human Body, exhibiting their Origin, Divisions, and Connections, with their Distribution to the Various Regions of the Cutaneous Surface, and to all the Muscles. By W. H. FLOWER, F.R.S., F.R.C.S. Third Edition, with 6 Plates. Royal 4to, 12s.

Atlas of Pathological Anatomy. By Dr. LANCEREAUX. Translated by W. S. GREENFIELD, M.D., Professor of Pathology in the University of Edinburgh. Imp. 8vo, with 70 Coloured Plates, £5 5s.

A Manual of Pathological Anatomy. By C. HANDFIELD JONES, M.B., F.R.S., and E. H. SIEVEKING, M.D., F.R.C.P. Edited by J. F. PAYNE, M.D., F.R.C.P., Lecturer on General Pathology at St. Thomas's Hospital. Second Edition. Crown 8vo, with 195 Engravings, 16s.

Post-mortem Examinations:
A Description and Explanation of the Method of Performing them, with especial reference to Medico-Legal Practice. By Prof. VIRCHOW. Translated by Dr. T. P. SMITH. Second Edition. Fcap. 8vo, with 4 Plates, 3s. 6d.

The Human Brain:
Histological and Coarse Methods of Research. A Manual for Students and Asylum Medical Officers. By W. BEVAN LEWIS, L.R.C.P. Lond., Deputy Medical Superintendent to the West Riding Lunatic Asylum. 8vo, with Wood Engravings and Photographs, 8s.

Manual of Physiology:
For the use of Junior Students of Medicine. By GERALD F. YEO, M.D., F.R.C.S., Professor of Physiology in King's College, London. Crown 8vo, with 300 Engravings, 14s.

Principles of Human Physiology. By W. B. CARPENTER, C.B., M.D., F.R.S. Ninth Edition. By HENRY POWER, M.B., F.R.C.S. 8vo, with 3 Steel Plates and 377 Wood Engravings, 31s. 6d.

Syllabus of a Course of Lectures on Physiology. By PHILIP H. PYE-SMITH, B.A., M.D., F.R.C.P., Physician to Guy's Hospital. Crown 8vo, with Diagrams and an Appendix of Notes and Tables, 5s.

Sanderson's Handbook for the Physiological Laboratory. By E. KLEIN, M.D., F.R.S.; J. BURDON-SANDERSON, M.D., F.R.S.; MICHAEL FOSTER, M.D., F.R.S.; and T. LAUDER BRUNTON, M.D., F.R.S. 8vo, with 123 Plates, 24s.

A Treatise on Human Physiology. By JOHN C. DALTON, M.D. Seventh Edition. 8vo, with 252 Engravings, 20s.

A Text-Book of Medical Physics, for the Use of Students and Practitioners of Medicine. By JOHN C. DRAPER, M.D., LL.D., Professor of Chemistry and Physics in the Medical Department of the University of New York. With 377 Engravings. 8vo, 18s.

Histology and Histo-Chemistry of Man. By HEINRICH FREY, Professor of Medicine in Zurich. Translated by ARTHUR E. J. BARKER, Assistant Surgeon to University College Hospital. 8vo, with 608 Engravings, 21s.

The Law of Sex.
By G. B. STARKWEATHER, F.R.G.S. With 40 Illustrative Portraits. 8vo, 16s.

Manual of the Laws Affecting Medical Men. By ROBT. G. GLENN, LL.B., Barrister-at-Law. With a Chapter on Medical Etiquette, by A. CARPENTER, M.D. 8vo, 14s.

Medical Jurisprudence:
Its Principles and Practice. By ALFRED S. TAYLOR, M.D., F.R.C.P., F.R.S. Third Edition, by THOMAS STEVENSON, M.D., F.R.C.P., Lecturer on Medical Jurisprudence at Guy's Hospital. 2 vols. 8vo, with 188 Engravings, 31s. 6d.

By the same Author.

A Manual of Medical Jurisprudence. Tenth Edition. Crown 8vo, with 55 Engravings, 14s.

Poisons, *Also.*
In Relation to Medical Jurisprudence and Medicine. Third Edition. Crown 8vo, with 104 Engravings, 16s.

Lectures on Medical Jurisprudence. By FRANCIS OGSTON, M.D., late Professor in the University of Aberdeen. Edited by FRANCIS OGSTON, Jun., M.D. 8vo, with 12 Copper Plates, 18s.

A Handy Book of Forensic Medicine and Toxicology. By C. MEYMOTT TIDY, M.D., F.C.S., and W. BATHURST WOODMAN, M.D., F.R.C.P. 8vo, with 8 Lithographic Plates and 116 Engravings, 31s. 6d.

The Student's Guide to Medical Jurisprudence. By JOHN ABERCROMBIE, M.D., Lecturer on Forensic Medicine to Charing Cross Hospital. Fcap. 8vo, 7s. 6d.

Microscopical Examination of Drinking Water and of Air. By J. D. MACDONALD, M.D., F.R.S., Ex-Professor of Naval Hygiene in the Army Medical School. Second Edition. 8vo, with 25 Plates, 7s. 6d.

Dress: Its Sanitary Aspect.
A Paper read before the Brighton Social Union, Jan. 30, 1880. By BERNARD ROTH, F.R.C.S. 8vo, with 8 Plates, 2s.

A Manual of Practical Hygiene. By F. A. PARKES, M.D., F.R.S. Sixth Edition, by F. DE CHAUMONT, M.D., F.R.S., Professor of Military Hygiene in the Army Medical School. 8vo, with numerous Plates and Engravings. 18s.

A Handbook of Hygiene and Sanitary Science. By GEO. WILSON, M.A., M.D., F.R.S.E., Medical Officer of Health for Mid-Warwickshire. Fifth Edition. Crown 8vo, with Engravings, 10s. 6d.

By the same Author.

Healthy Life and Healthy Dwellings: A Guide to Personal and Domestic Hygiene. Fcap. 8vo, 5s.

Sanitary Examinations Of Water, Air, and Food. A Vade-Mecum for the Medical Officer of Health. By CORNELIUS B. FOX, M.D., F.R.C.P. Crown 8vo, with 94 Engravings, 12s. 6d.

Dangers to Health: A Pictorial Guide to Domestic Sanitary Defects. By T. PRIDGIN TEALE, M.A., Surgeon to the Leeds General Infirmary. Fourth Edition. 8vo, with 70 Lithograph Plates (mostly coloured), 10s.

Hospitals, Infirmaries, and Dispensaries: Their Construction, Interior Arrangement, and Management; with Descriptions of existing Institutions, and 74 Illustrations. By F. OPPERT, M.D., M.R.C.P.L. Second Edition. Royal 8vo, 12s.

Pay Hospitals and Paying Wards throughout the World. By HENRY C. BURDETT, late Secretary to the Seamen's Hospital Society. 8vo, 7s.

By the same Author.

Cottage Hospitals — General, Fever, and Convalescent: Their Progress, Management, and Work. Second Edition, with many Plans and Illustrations. Crown 8vo, 14s.

Hospital Construction and Management. By F. J. MOUAT, M.D., Local Government Board Inspector, and H. SAXON SNELL, Fell. Roy. Inst. Brit. Architects. In 2 Parts, 4to, 15s. each; or, the whole work bound in half calf, with large Map, 54 Lithographic Plates, and 27 Woodcuts, 35s.

Manual of Anthropometry: A Guide to the Measurement of the Human Body, containing an Anthropometrical Chart and Register, a Systematic Table of Measurements, &c. By CHARLES ROBERTS, F.R.C.S. 8vo, with numerous Illustrations and Tables, 8s. 6d.

By the same Author.

Detection of Colour-Blindness and Imperfect Eyesight. 8vo, with a Table of Coloured Wools, and Sheet of Test-types, 5s.

A Manual of Psychological Medicine. With an Appendix of Cases. By JOHN C. BUCKNILL, M.D., F.R.S., and D. HACK TUKE, M.D., F.R.C.P. Fourth Edition. 8vo, with 12 Plates (30 Figures) and Engravings, 25s.

Illustrations of the Influence of the Mind upon the Body in Health and Disease: Designed to elucidate the Action of the Imagination. By DANIEL HACK TUKE, M.D., F.R.C.P., LL.D. Second Edition. 2 vols. crown 8vo, 15s.

By the same Author.

Sleep-Walking and Hypnotism. 8vo, 5s.

A Manual of Psychological Medicine and Allied Nervous Disorders. By EDWARD C. MANN, M.D., Member of the New York Medico-Legal Society. With Plates. 8vo, 24s.

Mental Diseases. Clinical Lectures. By T. S. CLOUSTON, M.D., F.R.C.P. Edin., Lecturer on Mental Diseases in the University of Edinburgh. With 8 Plates (6 Coloured). Crown 8vo, 12s. 6d.

The Student's Guide to the Practice of Midwifery. By D. LLOYD ROBERTS, M.D., F.R.C.P., Lecturer on Clinical Midwifery and Diseases of Women at Owen's College; Obstetric Physician to the Manchester Royal Infirmary. Third Edition. Fcap. 8vo, with 2 Coloured Plates and 127 Wood Engravings, 7s. 6d.

Handbook of Midwifery for Midwives: By J. E. BURTON, L.R.C.P. Lond., Surgeon to the Hospital for Women, Liverpool. Second Edition. With Engravings. Fcap. 8vo, 6s.

Lectures on Obstetric Operations: Including the Treatment of Hæmorrhage, and forming a Guide to the Management of Difficult Labour. By ROBERT BARNES, M.D., F.R.C.P., Obstetric Physician to St. George's Hospital. Third Edition. 8vo, with 124 Engravings, 18s.

By the same Author.

A Clinical History of Medical and Surgical Diseases of Women. Third Edition. 8vo, with Engravings. [*In the Press.*

Clinical Lectures on Diseases of Women: Delivered in St. Bartholomew's Hospital, by J. MATTHEWS DUNCAN, M.D., F.R.C.P., F.R.S.E. Second Edition. 8vo, 14s.

By the same Author.

Sterility in Woman. Being the Gulstonian Lectures, delivered in the Royal College of Physicians, in Feb., 1883. 8vo, 6s.

The Student's Guide to the Diseases of Women. By ALFRED L. GALABIN, M.D., F.R.C.P., Obstetric Physician to Guy's Hospital. Third Edition. Fcap. 8vo, with 78 Engravings, 7s. 6d.

West on the Diseases of Women. Fourth Edition, revised by the Author, with numerous Additions by J. MATTHEWS DUNCAN, M.D., F.R.C.P., F.R.S.E., Obstetric Physician to St. Bartholomew's Hospital. 8vo, 16s.

Notes on Diseases of Women: Specially designed to assist the Student in preparing for Examination. By J. J. REYNOLDS, L.R.C.P., M.R.C.S. Second Edition. Fcap. 8vo, 2s. 6d.

By the same Author.

Notes on Midwifery: Specially designed for Students preparing for Examination. Fcap. 8vo, 4s.

Dysmenorrhœa, its Pathology and Treatment. By HEYWOOD SMITH, M.D. Oxon., Physician to the Hospital for Women, &c. Crown 8vo, with Engravings, 4s. 6d.

Obstetric Aphorisms: For the Use of Students commencing Midwifery Practice. By JOSEPH G. SWAYNE, M.D. Eighth Edition. Fcap. 8vo, with Engravings, 3s. 6d.

Obstetric Medicine and Surgery: Their Principles and Practice. By F. H. RAMSBOTHAM, M.D., F.R.C.P. Fifth Edition. 8vo, with 120 Plates, 22s.

Schroeder's Manual of Midwifery, including the Pathology of Pregnancy and the Puerperal State. Translated by CHARLES H. CARTER, B.A., M.D. 8vo, with Engravings, 12s. 6d.

Influence of Posture on Women in Gynecic and Obstetric Practice. By J. H. AVELING, M.D., Physician to the Chelsea Hospital for Women. 8vo, 6s.

By the same Author.

The Chamberlens and the Midwifery Forceps: Memorials of the Family, and an Essay on the Invention of the Instrument. 8vo, with Engravings, 7s. 6d.

A Handbook of Uterine Therapeutics, and of Diseases of Women. By E. J. TILT, M.D., M.R.C.P. Fourth Edition. Post 8vo, 10s.

By the same Author.

The Change of Life In Health and Disease: A Clinical Treatise on the Diseases of the Nervous System incidental to Women at the Decline of Life. Fourth Edition. 8vo, 10s. 6d.

Chronic Disease of the Heart: Its Bearings upon Pregnancy, Parturition, and Childbed. By ANGUS MACDONALD, M.D., F.R.S.E., Physician to the Edinburgh Royal Infirmary. 8vo, with Engravings, 8s. 6d.

Ovarian and Uterine Tumours: Their Pathology and Surgical Treatment. By Sir T. SPENCER WELLS, Bart., F.R.C.S., Consulting Surgeon to the Samaritan Hospital. 8vo, with Engravings, 21s.

By the same Author.

Abdominal Tumours: Their Diagnosis and Surgical Treatment. 8vo, with Engravings, 3s. 6d.

The Principles and Practice of Gynæcology. By THOMAS ADDIS EMMET, M.D., Surgeon to the Woman's Hospital, New York. Third Edition. Royal 8vo, with 150 Engravings, 24s.

Diseases of the Uterus, Ovaries, and Fallopian Tubes: A Practical Treatise by A. COURTY, Professor of Clinical Surgery, Montpellier. Translated from Third Edition by his Pupil, AGNES MCLAREN, M.D., M.K.Q.C.P.I., with Preface by J. MATTHEWS DUNCAN, M.D., F.R.C.P. 8vo, with 424 Engravings, 24s.

Backward Displacements of the Uterus and Prolapsus Uteri: Treatment by the New Method of Shortening the Round Ligaments. By WILLIAM ALEXANDER, M.D., M.Ch.Q.U.I., F.R.C.S., Surgeon to the Liverpool Infirmary. Crown 8vo, with Engravings, 3s. 6d.

The Female Pelvic Organs: Their Surgery, Surgical Pathology, and Surgical Anatomy. In a Series of Coloured Plates taken from Nature; with Commentaries, Notes, and Cases. By HENRY SAVAGE, M.D., F.R.C.S., Consulting Officer of the Samaritan Free Hospital. Fifth Edition. Roy. 4to, with 17 Lithographic Plates (15 coloured) and 52 Woodcuts, £1 15s.

The Student's Guide to Diseases of Children. By JAS. F. GOODHART, M.D., F.R.C.P., Assistant Physician to Guy's Hospital; Physician to the Evelina Hospital for Sick Children. Fcap. 8vo, 10s. 6d.

The Wasting Diseases of Infants and Children. By EUSTACE SMITH, M.D., Physician to the King of the Belgians, Physician to the East London Hospital for Children. Fourth Edition. Post 8vo, 8s. 6d.

By the same Author.

Diseases in Children: A Practical Treatise. 8vo, 22s.

Also.

Clinical Studies of Disease in Children. Second Edition. Post 8vo. [*In the Press.*

A Practical Manual of the Diseases of Children. With a Formulary. By EDWARD ELLIS, M.D. Fourth Edition. Crown 8vo, 10s.

By the same Author.

A Manual of what every Mother should know. Fcap. 8vo, 1s. 6d.

Diseases of Children.
For Practitioners and Students. By W. H. DAY, M.D., Physician to the Samaritan Hospital. Second Edition. Crown 8vo, 12s. 6d.

Infant Feeding and its Influence on Life; By C. H. F. ROUTH, M.D., Physician to the Samaritan Hospital. Third Edition. Fcap. 8vo, 7s. 6d.

A Manual for Hospital Nurses and others engaged in Attending on the Sick. By EDWARD J. DOMVILLE, Surgeon to the Exeter Lying-in Charity. Fifth Edition. Crown 8vo, 2s. 6d.

A Manual of Nursing, Medical and Surgical. By CHARLES J. CULLINGWORTH, M.D., Physician to St. Mary's Hospital, Manchester. Second Edition. Fcap. 8vo, with Engravings, 3s. 6d.

By the same Author.

A Short Manual for Monthly Nurses. Fcap. 8vo, 1s. 6d.

Notes on Fever Nursing.
By J. W. ALLAN, M.B., Superintendent and Physician, Glasgow Fever Hospital. Crown 8vo, with Engravings, 2s. 6d.

Manual of Botany:
Including the Structure, Functions, Classification, Properties, and Uses of Plants. By ROBERT BENTLEY, Professor of Botany in King's College and to the Pharmaceutical Society. Fourth Edition. Crown 8vo, with 1,185 Engravings, 15s.

By the same Author.

The Student's Guide to Structural, Morphological, and Physiological Botany. With 660 Engravings. Fcap. 8vo, 7s. 6d.

Also.

The Student's Guide to Systematic Botany, including the Classification of Plants and Descriptive Botany. Fcap. 8vo, with 350 Engravings, 3s. 6d.

Medicinal Plants:
Being descriptions, with original figures, of the Principal Plants employed in Medicine, and an account of their Properties and Uses. By Prof. BENTLEY and Dr. H. TRIMEN. In 4 vols., large 8vo, with 306 Coloured Plates, bound in Half Morocco, Gilt Edges, £11 11s.

The National Dispensatory:
Containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicines. By ALFRED STILLÉ, M.D., LL.D., and JOHN M. MAISCH, Ph.D. Third Edition. 8vo, with 311 Engravings, 36s.

Royle's Manual of Materia Medica and Therapeutics. Sixth Edition. By JOHN HARLEY, M.D., Physician to St. Thomas's Hospital. Crown 8vo, with 139 Engravings, 15s.

The Student's Guide to Materia Medica and Therapeutics. By JOHN C. THOROWGOOD, M.D., F.R.C.P. Second Edition. Fcap. 8vo, 7s.

Materia Medica and Therapeutics. By CHARLES D. F. PHILLIPS, M.D., F.R.S. Edin., late Lecturer on Materia Medica and Therapeutics at the Westminster Hospital Medical School.
Vol. 1—Vegetable Kingdom. 8vo, 15s.
Vol. 2—Inorganic Substances. 8vo, 21s.

Binz's Elements of Therapeutics: A Clinical Guide to the Action of Drugs. Translated by E. I. SPARKS, M.B., F.R.C.P. Crown 8vo, 8s. 6d.

Materia Medica.
A Manual for the use of Students. By ISAMBARD OWEN, M.D., F.R.C.P., Lecturer on Materia Medica, &c., to St. George's Hospital. Crown 8vo, 6s.

The Pharmacopœia of the London Hospital. Compiled under the direction of a Committee appointed by the Hospital Medical Council. Fcap. 8vo, 3s.

A Companion to the British Pharmacopœia. By PETER SQUIRE, F.L.S., assisted by his Sons, P. W. and A. H. SQUIRE. 13th Edition. 8vo, 10s. 6d.

By the same Authors.

The Pharmacopœias of the London Hospitals, arranged in Groups for Easy Reference and Comparison. Fifth Edition. 18mo, 6s.

Bazaar Medicines of India,
And Common Medical Plants: With Full Index of Diseases, indicating their Treatment by these and other Agents procurable throughout India, &c. By E. J. WARING, C.I.E., M.D., F.R.C.P. Fourth Edition. Fcap. 8vo, 5s.

Tropical Dysentery and Chronic Diarrhœa — Liver Abscess — Malarial Cachexia — Insolation — with other forms of Tropical Diseases, &c. By Sir JOSEPH FAYRER, K.C.S.I., M.D. 8vo, 15s.

By the same Author.

Climate and Fevers of India, with a series of Cases (Croonian Lectures, 1882). 8vo, with 17 Temperature Charts, 12s.

Family Medicine for India.
A Manual. By WILLIAM J. MOORE, M.D., C.I.E., Honorary Surgeon to the Viceroy of India. Published under the Authority of the Government of India. Fourth Edition. Post 8vo, with 64 Engravings, 12s.

By the same Author.

Health-Resorts for Tropical Invalids, in India, at Home, and Abroad. Post 8vo, 5s.

Diseases of Tropical Climates,
And their Treatment: With Hints for the Preservation of Health in the Tropics, By JAMES A. HORTON, M.D., Surgeon-Major. Second Edition. Post 8vo, 12s. 6d.

Spirillum Fever
(Synonyms, Famine or Relapsing Fever), as seen in Western India. By H. VANDYKE CARTER, M.D., F.R.C.P., Surgeon-Major I.M.D. 8vo, with Plates, 21s.

The Student's Guide to the Practice of Medicine. By MATTHEW CHARTERIS, M.D., Professor of Materia Medica in the University of Glasgow. Fourth Edition. Fcap. 8vo, with Engravings on Copper and Wood.
[*In the Press.*

Hooper's Physicians' Vade-Mecum. A Manual of the Principles and Practice of Physic. Tenth Edition. By W. A. GUY, F.R.C.P., F.R.S., and J. HARLEY, M.D., F.R.C.P. With 118 Engravings. Fcap. 8vo, 12s. 6d.

Clinical Medicine:
A Systematic Treatise on the Diagnosis and Treatment of Disease. By AUSTIN FLINT, M.D., Professor of Medicine in the Bellevue Hospital Medical College. 8vo, 20s.
By the same Author.

Phthisis:
In a series of Clinical Studies. 8vo, 16s.

The Student's Guide to Clinical Medicine and Case-Taking. By FRANCIS WARNER, M.D., F.R.C.P., Assistant Physician to the London Hospital. Second edition. Fcap. 8vo, 5s.

The Student's Guide to Medical Diagnosis. By SAMUEL FENWICK, M.D., F.R.C.P., Physician to the London Hospital. Fifth Edition. Fcap. 8vo, with 111 Engravings, 7s.
By the same Author.

The Student's Outlines of Medical Treatment. Second Edition. Fcap. 8vo, 7s.
Also.

On Chronic Atrophy of the Stomach, and on the Nervous Affections of the Digestive Organs. 8vo, 8s.

How to Examine the Chest:
Being a Practical Guide for the use of Students. By SAMUEL WEST, M.D., F.R.C.P., Physician to the City of London Hospital for Diseases of the Chest; Medical Tutor and Registrar at St. Bartholomew's Hospital. With 42 Engravings. Fcap. 8vo, 5s.

The Contagiousness of Pulmonary Consumption, and its Antiseptic Treatment. By J. BURNEY YEO, M.D., Physician to King's College Hospital. Crown 8vo, 3s. 6d.

The Operative Treatment of Intra-thoracic Effusion. Fothergillian Prize Essay. By NORMAN PORRITT, L.R.C.P. Lond., M.R.C.S. With Engravings. Crown 8vo, 6s.

The Microscope in Medicine.
By LIONEL S. BEALE, M.B., F.R.S., Physician to King's College Hospital. Fourth Edition. 8vo, with 86 Plates, 21s.
Also.

On Slight Ailments:
Their Nature and Treatment. Second Edition. 8vo, 5s.

The Spectroscope in Medicine.
By CHARLES A. MACMUNN, B.A., M.D. 8vo, with 3 Chromo-lithographic Plates of Physiological and Pathological Spectra, and 13 Engravings, 9s.

Diseases of the Chest:
Contributions to their Clinical History, Pathology, and Treatment. By A. T. HOUGHTON WATERS, M.D., Physician to the Liverpool Royal Infirmary. Second Edition. 8vo, with Plates, 15s.

Winter Cough
(Catarrh, Bronchitis, Emphysema, Asthma). By HORACE DOBELL, M.D., Consulting Physician to the Royal Hospital for Diseases of the Chest. Third Edition. 8vo, with Coloured Plates, 10s. 6d.
By the same Author.

Loss of Weight, Blood-Spitting, and Lung Disease. Second Edition, to which is added Part VI., "On the Functions and Diseases of the Liver." 8vo, with Chromo-lithograph, 10s. 6d.
Also.

The Mont Dore Cure, and the Proper Way to Use it. 8vo, 7s. 6d.

Notes on Asthma:
Its Forms and Treatment. By JOHN C. THOROWGOOD, M.D., Physician to the Hospital for Diseases of the Chest. Third Edition. Crown 8vo, 4s. 6d.

Croonian Lectures on Some Points in the Pathology and Treatment of Typhoid Fever. By WILLIAM CAYLEY, M.D., F.R.C.P., Physician to the Middlesex and the London Fever Hospitals. Crown 8vo, 4s. 6d.

Diseases of the Heart and Aorta:
Clinical Lectures. By G. W. BALFOUR, M.D., F.R.C.P., F.R.S. Edin., late Senior Physician and Lecturer on Clinical Medicine, Royal Infirmary, Edinburgh. Second Edition. 8vo, with Chromo-lithograph and Wood Engravings, 12s. 6d.

Manual of the Physical Diagnosis of Diseases of the Heart, including the use of the Sphygmograph and Cardiograph. By A. E. SANSOM, M.D., F.R.C.P., Assistant Physician to the London Hospital. Third Edition. Fcap. 8vo, with 48 Engravings, 7s. 6d.

Studies on Functional Nervous Disorders. By C. HANDFIELD JONES, M.B., F.R.S., Physician to St. Mary's Hospital. Second Edition. 8vo, 18s.

Medical Ophthalmoscopy :
A Manual and Atlas. By WILLIAM R. GOWERS, M.D., F.R.C.P., Assistant Professor of Clinical Medicine in University College, and Senior Assistant Physician to the Hospital. Second Edition, with Coloured Autotype and Lithographic Plates and Woodcuts. 8vo, 18s.

By the same Author.

Epilepsy, and other Chronic Convulsive Diseases : Their Causes, Symptoms, and Treatment. 8vo, 10s. 6d.

Also.

Pseudo-Hypertrophic Muscular Paralysis : A Clinical Lecture. 8vo, with Engravings and Plate, 3s. 6d.

Also.

Diagnosis of Diseases of the Spinal Cord. Third Edition. 8vo, with Engravings, 4s. d.

Also.

Diagnosis of Diseases of the Brain. 8vo, with Engravings, 7s. 6d.

Visceral Neuroses :
Being the Gulstonian Lectures on Neuralgia of the Stomach, and Allied Disorders. By T. CLIFFORD ALLBUTT, M.A., M.D. Cantab., F.R.S., F.R.C.P., Consulting Physician to the Leeds General Infirmary. 8vo, 4s. 6d.

Diseases of the Nervous System.
Lectures delivered at Guy's Hospital. By SAMUEL WILKS, M.D., F.R.S. Second Edition. 8vo, 18s.

Nervous Diseases :
Their Description and Treatment. A Manual for Students and Practitioners of Medicine. By ALLEN M. HAMILTON, M.D., Physician at the Epileptic and Paralytic Hospital, New York. Second Edition. Royal 8vo, with 72 Engravings, 16s.

Diseases of the Nervous System:
Especially in Women. By S. WEIR MITCHELL, M.D., Physician to the Philadelphia Infirmary for Diseases of the Nervous System. Second Edition. 8vo, with 5 plates, 8s.

Nerve Vibration and Excitation, as Agents in the Treatment of Functional Disorder and Organic Disease. By J. MORTIMER GRANVILLE, M.D. 8vo, 5s.

By the same Author.

Gout in its Clinical Aspects. Crown 8vo, 6s.

Regimen to be adopted in Cases of Gout. By WILHELM EBSTEIN, M.D., Professor of Clinical Medicine in Göttingen. Translated by JOHN SCOTT, M.A., M.B. 8vo, 2s. 6d.

Notes on Rheumatism.
By JULIUS POLLOCK, M.D., F.R.C.P., Senior Physician to the Charing Cross Hospital. Second Edition. Fcap. 8vo, with Engravings, 3s. 6d.

Diseases of the Liver :
With and without Jaundice. By GEORGE HARLEY, M.D., F.R.C.P., F.R.S. 8vo, with 2 Plates and 36 Engravings, 21s.

Diseases of the Stomach :
The Varieties of Dyspepsia, their Diagnosis and Treatment. By S. O. HABERSHON, M.D., F.R.C.P. Third Edition. Crown 8vo, 5s.

By the same Author.

Pathology of the Pneumogastric Nerve : Being the Lumleian Lectures for 1876. Second edition. Post 8vo, 4s.

Also.

Diseases of the Abdomen,
Comprising those of the Stomach and other parts of the Alimentary Canal, Œsophagus, Cæcum, Intestines, and Peritoneum. Third Edition. 8vo, with 5 Plates, 21s.

Also.

Diseases of the Liver,
Their Pathology and Treatment. Lettsomian Lectures. Second Edition. Post 8vo, 4s.

Acute Intestinal Strangulation,
And Chronic Intestinal Obstruction (Mode of Death from). By THOMAS BRYANT, F.R.C.S., Senior Surgeon to Guy's Hospital. 8vo, 3s.

Gout, Rheumatism,
And the Allied Affections ; with Chapters on Longevity and Sleep. By PETER HOOD, M.D. Third Edition. Crown 8vo, 7s. 6d.

Diseases of the Nervous System.
Clinical Lectures. By THOMAS BUZZARD, M.D., F.R.C.P., Physician to the National Hospital for the Paralysed and Epileptic. With Engravings, 8vo. 15s.

A Treatise on the Diseases of the Nervous System. By JAMES ROSS, M.D., F.R.C.P., Assistant Physician to the Manchester Royal Infirmary. Second Edition. 2 vols. 8vo, with Lithographs, Photographs, and 332 Woodcuts, 52s. 6d.

Food and Dietetics,
Physiologically and Therapeutically Considered. By F. W. PAVY, M.D., F.R.S., Physician to Guy's Hospital. Second Edition. 8vo, 15s.

By the same Author.

Croonian Lectures on Certain Points connected with Diabetes. 8vo, 4s. 6d.

Headaches :
Their Nature, Causes, and Treatment. By W. H. DAY, M.D., Physician to the Samaritan Hospital. Third Edition. Crown 8vo, with Engravings, 6s. 6d.

On Megrim, Sick Headache, and some Allied Disorders : A Contribution to the Pathology of Nerve Storms. By E. LIVEING, M.D., F.R.C.P. 8vo, 15s.

Health Resorts at Home and Abroad. By MATTHEW CHARTERIS, M.D., Physician to the Glasgow Royal Infirmary. Crown 8vo, with Map, 4s. 6d.

Winter and Spring
On the Shores of the Mediterranean. By HENRY BENNET, M.D. Fifth Edition. Post 8vo, with numerous Plates, Maps, and Engravings, 12s. 6d.

By the same Author.

Treatment of Pulmonary Consumption by Hygiene, Climate, and Medicine. Third Edition. 8vo, 7s. 6d.

Also.

Nutrition in Health and Disease. Third (Library) Edition, 8vo, 5s.; Cheap Edition, fcap. 8vo, 2s. 6d.

The Riviera:
Sketches of the Health-Resorts of the Coast of France and Italy, from Hyères to Spezia: its Medical Aspect and Value, &c. By EDWARD I. SPARKS, M.B., F.R.C.P. Crown 8vo, 8s. 6d.

The Principal Southern and Swiss Health-Resorts: their Climate and Medical Aspect. By WILLIAM MARCET, M.D., F.R.C.P., F.R.S. With Illustrations. Crown 8vo, 7s. 6d.

Medical Guide to the Mineral Waters of France and its Wintering Stations. With a Special Map. By A. VINTRAS, M.D., Physician to the French Embassy, and to the French Hospital, London. Crown 8vo, 8s.

The Ocean as a Health-Resort:
A Practical Handbook of the Sea, for the use of Tourists and Health-Seekers. By WILLIAM S. WILSON, L.R.C.P. Second Edition, with Chart of Ocean Routes, &c. Crown 8vo, 7s. 6d.

Principal Health-Resorts
Of Europe and Africa, and their Use in the Treatment of Chronic Diseases. By T. M. MADDEN, M.D. 8vo, 10s.

Handbook of Medical and Surgical Electricity. By HERBERT TIBBITS, M.D., F.R.C.P.E., Senior Physician to the West London Hospital for Paralysis and Epilepsy. Second Edition. 8vo, with 95 Engravings, 9s.

By the same Author.

A Map of Ziemssen's Motor Points of the Human Body: A Guide to Localised Electrisation. Mounted on Rollers, 35 × 21. With 20 Illustrations, 5s.

Mechanical Exercise a Means of Cure: Being a Description of the Zander Institute, London; its History, Appliances, Scope, and Object. Edited by the Medical Officer of the Institution. Crown 8vo, with 24 Engravings, 2s. 6d.

Electricity and its Manner of Working in the Treatment of Disease. By WM. E. STEAVENSON, M.D., Physician and Electrician to St. Bartholomew's Hospital. 8vo, 4s. 6d.

Ambulance Handbook for Volunteers and Others. By J. ARDAVON RAYE, L.K. & Q.C.P.I., L.R.C.S.I., late Surgeon to H.B.M. Transport No. 14, Zulu Campaign, and Surgeon E.I.R. Rifles. 8vo, with 16 Plates (50 figures), 3s. 6d.

A System of Practical Surgery. By Sir W. FERGUSSON, Bart., F.R.S. Fifth Edition. 8vo, with 463 Engravings, 21s.

Surgical Emergencies:
Together with the Emergencies Attendant on Parturition and the Treatment of Poisoning. By PAUL SWAIN, F.R.C.S., Surgeon to the South Devon and East Cornwall Hospital. Third Edition. Crown 8vo, with 117 Engravings, 5s.

Operative Surgery in the Calcutta Medical College Hospital. Statistics, Cases, and Comments. By KENNETH MCLEOD, A.M., M.D., F.R.C.S.E., Surgeon-Major, Indian Medical Service, Professor of Surgery in Calcutta Medical College. 8vo, with Illustrations, 12s. 6d.

A Course of Operative Surgery. By CHRISTOPHER HEATH, Surgeon to University College Hospital. Second Edition. With 20 coloured Plates (180 figures) from Nature, by M. LÉVEILLÉ, and several Woodcuts. Large 8vo, 30s.

By the same Author.

The Student's Guide to Surgical Diagnosis. Second Edition. Fcap. 8vo, 6s. 6d.

Also.

Manual of Minor Surgery and Bandaging. For the use of House-Surgeons, Dressers, and Junior Practitioners. Seventh Edition. Fcap. 8vo, with 129 Engravings, 6s.

Also.

Injuries and Diseases of the Jaws. Third Edition. 8vo, with Plate and 206 Wood Engravings, 14s.

Surgical Enquiries:
Including the Hastings Essay on Shock, the Treatment of Inflammations, and numerous Clinical Lectures. By FURNEAUX JORDAN, F.R.C.S., Professor of Surgery, Queen's College, Birmingham. Second Edition, with numerous Plates. Royal 8vo, 12s. 6d.

On Dislocations and Fractures. By JOSEPH MACLISE, F.R.C.S. Uniform with "Surgical Anatomy." 36 folio Plates and Text. Cloth, £2 10s.

The Practice of Surgery:
A Manual. By THOMAS BRYANT, Surgeon to Guy's Hospital. Fourth Edition. 2 vols. crown 8vo, with 750 Engravings (many being coloured), and including 6 chromo-lithographic plates, 32s.

The Surgeon's Vade-Mecum:
A Manual of Modern Surgery. By ROBERT DRUITT, F.R.C.S. Twelfth Edition. Fcap. 8vo, with Engravings. [*In the Press.*

Outlines of Surgery and Surgical Pathology. By F. LE GROS CLARK, F.R.S., assisted by W. W. WAGSTAFFE, F.R.C.S. Second Edition. 8vo, 10s. 6d.

Regional Surgery:
Including Surgical Diagnosis. A Manual for the use of Students. By F. A. SOUTHAM, M.A., M.B., F.R.C.S., Assistant Surgeon to the Manchester Royal Infirmary. Part I. The Head and Neck. Crown 8vo, 6s. 6d. — Part II. The Upper Extremity and Thorax. Crown 8vo, 7s. 6d.

Illustrations of Clinical Surgery.
By JONATHAN HUTCHINSON, F.R.S., Senior Surgeon to the London Hospital. In occasional fasciculi. I. to XVIII., 6s. 6d. each. Fasciculi I. to X. bound, with Appendix and Index, £3 10s.

By the same Author.

Pedigree of Disease:
Being Six Lectures on Temperament, Idiosyncrasy, and Diathesis. 8vo, 5s.

Treatment of Wounds and Fractures. Clinical Lectures. By SAMPSON GAMGEE, F.R.S.E., Surgeon to the Queen's Hospital, Birmingham. Second Edition. 8vo, with 40 Engravings, 10s.

Injuries of the Spine and Spinal Cord, and NERVOUS SHOCK, in their Surgical and Medico-Legal Aspects. By HERBERT W. PAGE, M.C. Cantab., F.R.C.S., Surgeon to St. Mary's Hospital. Second Edition, post 8vo, 10s.

Lectures on Orthopædic Surgery. By BERNARD E. BRODHURST, F.R.C.S., Surgeon to the Royal Orthopædic Hospital. Second Edition. 8vo, with Engravings, 12s. 6d.

By the same Author.

On Anchylosis, and the Treatment for the Removal of Deformity and the Restoration of Mobility in Various Joints. Fourth Edition. 8vo, with Engravings, 5s.

Also.

Curvatures and Diseases of the Spine. Third Edition. 8vo, with Engravings, 6s.

Face and Foot Deformities.
By FREDERICK CHURCHILL, C.M., Surgeon to the Victoria Hospital for Children. 8vo, with Plates and Illustrations, 10s. 6d.

Fractures:
A Treatise. By LEWIS A. STIMSON, B.A., M.D., Professor of Surgical Pathology in the University of New York. 8vo, with 360 Engravings, 21s.

Orthopædic Surgery,
And Diseases of the Joints. By L. A. SAYRE, M.D., Professor of Orthopædic Surgery in Bellevue Hospital Medical College. Second Edition. 8vo, with Coloured Plate and 324 Engravings, 21s.

Clubfoot:
Its Causes, Pathology, and Treatment. By WM. ADAMS, F.R.C.S., Surgeon to the Great Northern Hospital. Second Edition. 8vo, with 106 Engravings and 6 Lithographic Plates, 15s.

By the same Author.

On Contraction of the Fingers,
and its Treatment by Subcutaneous Operation; and on Obliteration of Depressed Cicatrices, by the same Method. 8vo, with 30 Engravings, 4s. 6d.

Also.

Lateral and other Forms of Curvature of the Spine: Their Pathology and Treatment. Second Edition. 8vo, with 5 Lithographic Plates and 72 Wood Engravings, 10s. 6d.

Spinal Curvatures:
Treatment by Extension and Jacket; with Remarks on some Affections of the Hip, Knee, and Ankle-joints. By H. MACNAUGHTON JONES, M.D., F.R.C.S.I. and Edin. Post 8vo, with 63 Engravings, 4s. 6d.

On Diseases and Injuries of the Eye: A Course of Systematic and Clinical Lectures to Students and Medical Practitioners. By J. R. WOLFE, M.D., F.R.C.S.E., Lecturer on Ophthalmic Medicine and Surgery in Anderson's College, Glasgow. With 10 Coloured Plates and 157 Wood Engravings. 8vo, £1 1s.

The General Practitioner's Guide to the Diseases and Injuries of the Eye and Eyelids. By LOUIS H. TOSSWILL, B.A., M.B. Cantab., M.R.C.S., Surgeon to the Exeter Eye Infirmary. Fcap. 8vo, 2s. 6d.

Hints on Ophthalmic Out-Patient Practice. By CHARLES HIGGENS, Ophthalmic Surgeon to Guy's Hospital. Second Edition. Fcap. 8vo, 3s.

The Electro-Magnet,
And its Employment in Ophthalmic Surgery. By SIMEON SNELL, Ophthalmic Surgeon to the Sheffield General Infirmary, &c. Crown 8vo, 3s. 6d.

The Student's Guide to Diseases of the Eye. By EDWARD NETTLESHIP, F.R.C.S., Ophthalmic Surgeon to St. Thomas's Hospital. Third Edition. Fcap. 8vo, with 150 Engravings and a Set of Coloured Papers illustrating Colour-Blindness, 7s. 6d.

Manual of the Diseases of the Eye. By CHARLES MACNAMARA, F.R.C.S., Surgeon to Westminster Hospital. Fourth Edition. Crown 8vo, with 4 Coloured Plates and 66 Engravings, 10s. 6d.

A Manual of the Principles and Practice of Ophthalmic Medicine and Surgery. By T. WHARTON JONES, F.R.C.S., F.R.S. Third Edition. Fcap. 8vo, with 9 Coloured Plates and 173 Engravings, 12s. 6d.

Atlas of Ophthalmoscopy. Composed of 12 Chromo-lithographic Plates (59 Figures drawn from nature) and Explanatory Text. By RICHARD LIEBREICH, M.R.C.S. Translated by H. ROSBOROUGH SWANZY, M.B. Third edition, 4to, 40s.

Glaucoma: Its Causes, Symptoms, Pathology, and Treatment. By PRIESTLEY SMITH, M.R.C.S., Ophthalmic Surgeon to the Queen's Hospital, Birmingham. 8vo, with Lithographic Plates, 10s. 6d.

Refraction of the Eye: A Manual for Students. By GUSTAVUS HARTRIDGE, F.R.C.S., Assistant Physician to the Royal Westminster Ophthalmic Hospital. Crown 8vo, with Lithographic Plate and 84 Woodcuts, 5s.

Hare-Lip and Cleft Palate. By FRANCIS MASON, F.R.C.S., Surgeon to St. Thomas's Hospital. 8vo, with 66 Engravings, 6s.

By the same Author.

The Surgery of the Face. 8vo, with 100 Engravings, 7s. 6d.

A Practical Treatise on Aural Surgery. By H. MACNAUGHTON JONES, M.D., Professor of the Queen's University in Ireland, late Surgeon to the Cork Ophthalmic and Aural Hospital. Second Edition. Crown 8vo, with 63 Engravings, 8s. 6d.

By the same Author.

Atlas of Diseases of the Membrana Tympani. In Coloured Plates, containing 62 Figures, with Text. Crown 4to, 21s.

Diseases and Injuries of the Ear. By W. B. DALBY, F.R.C.S., Aural Surgeon to St. George's Hospital. Third Edition. Crown 8vo, with Engravings, 7s. 6d.

Diseases of the Throat and Nose: A Manual. By MORELL MACKENZIE, M.D. Lond., Senior Physician to the Hospital for Diseases of the Throat. Vol. I. Diseases of the Pharynx, Larynx, and Trachea. Post 8vo, with 112 Engravings, 12s. 6d.

Vol. II. Diseases of the Nose and Naso-Pharynx; with a Section on Diseases of the Œsophagus. Post 8vo, with 93 Engravings, 12s. 6d.

By the same Author.

Diphtheria: Its Nature and Treatment, Varieties, and Local Expressions. 8vo, 5s.

Endemic Goitre or Thyreocele: Its Etiology, Clinical Characters, Pathology, Distribution, Relations to Cretinism, Myxœdema, &c., and Treatment. By WILLIAM ROBINSON, M.D. 8vo, 5s.

Lectures on Syphilis of the Larynx (Lesions of the Secondary and Intermediate Stages). By W. M. WHISTLER, M.D., Physician to the Hospital for Diseases of the Throat. Post 8vo. 4s.

Sore Throat: Its Nature, Varieties, and Treatment. By PROSSER JAMES, M.D., Physician to the Hospital for Diseases of the Throat. Fifth Edition. Post 8vo, with Coloured Plates and Engravings. [*In the Press.*

The Ear: Its Anatomy, Physiology, and Diseases. By C. H. BURNETT, A.M., M.D., Aural Surgeon to the Presbyterian Hospital, Philadelphia. Second Edition, 8vo, with 107 Engravings, 18s.

A Treatise on Vocal Physiology and Hygiene, with especial reference to the Cultivation and Preservation of the Voice. By GORDON HOLMES, M.D., Physician to the Municipal Throat and Ear Infirmary. Second Edition, with Engravings. Crown 8vo, 6s. 6d.

By the same Author.

A Guide to the Use of the Laryngoscope in General Practice. Crown 8vo, with Engravings, 2s. 6d.

A System of Dental Surgery. By JOHN TOMES, F.R.S., and C. S. TOMES, M.A., F.R.S. Third Edition. Fcap. 8vo, with many Engravings. [*In the Press.*

Dental Anatomy, Human and Comparative: A Manual. By CHARLES S. TOMES, M.A., F.R.S. Second Edition. Crown 8vo, with 191 Engravings, 12s. 6d.

Mechanical Dentistry in Gold and Vulcanite. By F. H. BALKWILL, L.D.S.R.C.S. 8vo, with 2 Lithographic Plates and 57 Engravings, 10s.

Principles and Practice of Dentistry: including Anatomy, Physiology, Pathology, Therapeutics, Dental Surgery, and Mechanism. By CHAPIN A. HARRIS, M.D., D.D.S. Revised and Edited by FERDINAND J. S. GORGAS, A.M., M.D., D.D.S., Professor in the Dental Department of Maryland University. Eleventh Edition. 8vo, with 750 Illustrations, 31s. 6d.

The Student's Guide to Dental Anatomy and Surgery. By HENRY SEWILL, M.R.C.S., L.D.S. Second Edition. Fcap. 8vo, with 78 Engravings, 5s. 6d.

A Manual of Dental Mechanics. By OAKLEY COLES, L.D.S.R.C.S. Second Edition. Crown 8vo, with 140 Engravings, 7s. 6d.

By the same Author.

Deformities of the Mouth. Third Edition. 8vo, with 83 Wood Engravings and 96 Drawings on Stone, 12s. 6d.

Notes on Dental Practice. By HENRY C. QUINBY, L.D.S.R.C.S.I. 8vo, with 87 Engravings, 9s.

Elements of Dental Materia Medica and Therapeutics, with Pharmacopœia. By JAMES STOCKEN, L.D.S.R.C.S., Pereira Prizeman for Materia Medica, and THOMAS GADDES, L.D.S. Eng. and Edin. Third Edition. Fcap. 8vo, 7s. 6d.

Dental Medicine: A Manual of Dental Materia Medica and Therapeutics. By F. J. S. GORGAS, A.M., M.D., D.D.S., Editor of "Harris's Principles and Practice of Dentistry," Professor in the Dental Department of Maryland University. 8vo, 14s.

Eczema. By MCCALL ANDERSON, M.D., Professor of Clinical Medicine in the University of Glasgow. Third Edition. 8vo, with Engravings, 7s. 6d.

Diseases of the Skin: With an Analysis of 8,000 Consecutive Cases and a Formulary. By L. D. BULKLEY, M.D., Physician for Skin Diseases at the New York Hospital. Crown 8vo, 6s. 6d.

On Certain Rare Diseases of the Skin. By JONATHAN HUTCHINSON, F.R.S., Senior Surgeon to the London Hospital, and to the Hospital for Diseases of the Skin. 8vo, 10s. 6d.

Diseases of the Skin: A Practical Treatise for the Use of Students and Practitioners. By J. N. HYDE, A.M., M.D., Professor of Skin and Venereal Diseases, Rush Medical College, Chicago. 8vo, with 66 Engravings, 17s.

Parasites: A Treatise on the Entozoa of Man and Animals, including some Account of the Ectozoa. By T. SPENCER COBBOLD, M.D., F.R.S. 8vo, with 85 Engravings, 15s.

Atlas of Skin Diseases. By TILBURY FOX, M.D., F.R.C.P. With 72 Coloured Plates. Royal 4to, half morocco, £6 6s.

Leprosy in British Guiana. By JOHN D. HILLIS, F.R.C.S., M.R.I.A., Medical Superintendent of the Leper Ayslum, British Guiana. Imp. 8vo, with 22 Lithographic Coloured Plates and Wood Engravings, £1 11s. 6d.

Certain Forms of Cancer, With a New and Successful Mode of Treating it. By A. MARSDEN, Senior Surgeon to the Cancer Hospital. Second Edition. 8vo, with Coloured Plates, 8s. 6d.

Cancer of the Breast. By THOMAS W. NUNN, F.R.C.S., Consulting Surgeon to the Middlesex Hospital. 4to, with 21 Coloured Plates, £2 2s.

On Cancer: Its Allies, and other Tumours; with special reference to their Medical and Surgical Treatment. By F. A. PURCELL, M.D., M.C., Surgeon to the Cancer Hospital, Brompton. 8vo, with 21 Engravings, 10s. 6d.

Sarcoma and Carcinoma: Their Pathology, Diagnosis, and Treatment. By HENRY T. BUTLIN, F.R.C.S., Assistant Surgeon to St. Bartholomew's Hospital. 8vo, with 4 Plates, 8s.

By the same Author.

Malignant Disease of the Larynx (Sarcoma and Carcinoma). 8vo, with 5 Engravings, 5s.

Clinical Notes on Cancer, Its Etiology and Treatment; with special reference to the Heredity-Fallacy, and to the Neurotic Origin of most Cases of Alveolar Carcinoma. By HERBERT L. SNOW, M.D. Lond., Surgeon to the Cancer Hospital, Brompton. Crown 8vo, 3s. 6d.

Diseases of the Testis, Spermatic Cord, and Scrotum. By THOMAS B. CURLING, F.R.S., Consulting Surgeon to the London Hospital. Fourth Edition. 8vo, with Engravings, 16s.

The Surgery of the Rectum. By HENRY SMITH, Professor of Surgery in King's College, Surgeon to the Hospital. Fifth Edition. 8vo, 6s.

Lectures on the Surgical Disorders of the Urinary Organs. By REGINALD HARRISON, F.R.C.S., Surgeon to the Liverpool Royal Infirmary. Second Edition, with 48 Engravings. 8vo, 12s. 6d.

By the same Author.

Lithotomy, Lithotrity, and the Early Detection of Stone in the Bladder; with a description of a New Method of Tapping the Bladder. 8vo, with Engravings, 2s. 6d.

Diseases of the Urinary Organs. Clinical Lectures. By Sir HENRY THOMPSON, F.R.C.S., Emeritus Professor of Clinical Surgery in University College. Seventh (Students') Edition. 8vo, with 84 Engravings, 2s. 6d.

By the same Author.

Diseases of the Prostate: Their Pathology and Treatment. Fifth (Students') Edition. 8vo, with numerous Engravings, 2s. 6d.

Also.

Surgery of the Urinary Organs. Some Important points connected therewith. Lectures delivered in the R.C.S. 8vo, with 44 Engravings. Students' Edition, 2s. 6d.

Also.

Practical Lithotomy and Lithotrity; or, An Inquiry into the Best Modes of Removing Stone from the Bladder. Third Edition. 8vo, with 87 Engravings, 10s.

Also.

The Preventive Treatment of Calculous Disease, and the Use of Solvent Remedies. Second Edition Fcap. 8vo, 2s. 6d.

Also.

Tumours of the Bladder: Their Nature, Symptoms, and Surgical Treatment. 8vo, with numerous Illustrations, 5s.

Also.

Stricture of the Urethra, and Urinary Fistulæ: their Pathology and Treatment. Fourth Edition. With 74 Engravings. 8vo, 6s.

Urinary and Renal Derangements and Calculous Disorders. By LIONEL S. BEALE, F.R.C.P., F.R.S., Physician to King's College Hospital. 8vo, 5s.

Hydrocele: Its several Varieties and their Treatment. By SAMUEL OSBORN, late Surgical Registrar to St. Thomas's Hospital. Fcap. 8vo, with Engravings, 3s.

By the same Author.

Diseases of the Testis. Fcap. 8vo, with Engravings, 3s. 6d.

Fistula, Hæmorrhoids, Painful Ulcer, Stricture, Prolapsus, and other Diseases of the Rectum: Their Diagnosis and Treatment. By WILLIAM ALLINGHAM, Surgeon to St. Mark's Hospital for Fistula. Fourth Edition. 8vo, with Engravings, 10s. 6d.

Diseases of the Rectum and Anus. By W. HARRISON CRIPPS, F.R.C.S., Assistant Surgeon to St. Bartholomew's Hospital, &c. 8vo, with 13 Lithographic Plates and numerous Wood Engravings, 12s. 6d.

Pathology of the Urine. Including a Complete Guide to its Analysis. By J. L. W. THUDICHUM, M.D., F.R.C.P. Second Edition, rewritten and enlarged. 8vo, with Engravings, 15s.

Student's Primer on the Urine. By J. TRAVIS WHITTAKER, M.D., Clinical Demonstrator at the Royal Infirmary, Glasgow. With 16 Plates etched on Copper. Post 8vo, 4s. 6d.

Syphilis and Pseudo-syphilis. By ALFRED COOPER, F.R.C.S., Surgeon to the Lock Hospital, to St. Mark's and the West London Hospitals. 8vo, 10s. 6d.

Genito-Urinary Organs, including Syphilis: A Practical Treatise on their Surgical Diseases, for Students and Practitioners. By W. H. VAN BUREN, M.D., and E. L. KEYES, M.D. Royal 8vo, with 140 Engravings, 21s.

Lectures on Syphilis. By HENRY LEE, Consulting Surgeon to St. George's Hospital. 8vo, 10s.

Coulson on Diseases of the Bladder and Prostate Gland. Sixth Edition. By WALTER J. COULSON, Surgeon to the Lock Hospital and to St. Peter's Hospital for Stone. 8vo, 16s.

On Rupture of the Urinary Bladder. Based on the Records of more than 300 Cases of the Affection. By WALTER RIVINGTON, F.R.C.S., President of the Hunterian Society; Surgeon to the London Hospital. 8vo, 5s. 6d.

The Reproductive Organs In Childhood, Youth, Adult Age, and Advanced Life, considered in their Physiological, Social, and Moral Relations. By WILLIAM ACTON, M.R.C.S. Sixth Edition. 8vo, 12s.

The Medical Adviser in Life Assurance. By E. H. SIEVEKING, M.D., F.R.C.P. Second Edition. Crown 8vo, 6s.

A Medical Vocabulary: An Explanation of all Terms and Phrases used in the various Departments of Medical Science and Practice, their Derivation, Meaning, Application, and Pronunciation. By R. G. MAYNE, M.D. LL.D. Fifth Edition. Fcap. 8vo, 10s. 6d.

A Dictionary of Medical Science: Containing a concise Explanation of the various Subjects and Terms of Medicine, &c. By ROBLEY DUNGLISON, M.D., LL.D. New Edition. Royal 8vo, 28s.

Abridged Medical Account Books. The "Expedite" Method. By J. MACNAB, L.R.C.S.E. *Index Ledger* Royal 4to., 15s. *Visiting List.* Cloth, 3s. Leather, in Pocket-book form, with Pencil, 5s.

Medical Education And Practice in all parts of the World. By H. J. HARDWICKE, M.D., M.R.C.P. 8vo, 10s.

INDEX.

Abercrombie's Medical Jurisprudence, 4
Acton's Reproductive Organs, 14
Adams (W.) on Clubfoot, 11
———— on Contraction of the Fingers, 11
———— on Curvature of the Spine, 11
Alexander's Displacements of the Uterus, 6
Allan on Fever Nursing, 7
Allbutt's Visceral Neuroses, 9
Allingham on Diseases of the Rectum, 14
Anatomical Remembrancer, 3
Anderson (McC.) on Eczema, 13
Aveling on the Chamberlens and Midwifery Forceps, 6
——— on the Influence of Posture on Women, 6
Balfour's Diseases of the Heart and Aorta, 8
Balkwill's Mechanical Dentistry, 12
Barnes (R.) on Obstetric Operations, 5
———— on Diseases of Women, 5
Beale's Microscope in Medicine, 8
——— Slight Ailments, 8
——— Urinary and Renal Derangements, 14
Bellamy's Surgical Anatomy, 3
Bennet (J. H.) on the Mediterranean, 10
———————— on Pulmonary Consumption, 10
———————— on Nutrition, 10
Bentley and Trimen's Medicinal Plants, 7
Bentley's Manual of Botany, 7
———— Structural Botany, 7
———— Systematic Botany, 7
Binz's Elements of Therapeutics, 7
Braune's Topographical Anatomy, 3
Brodhurst's Anchylosis, 11
———— Curvatures, &c., of the Spine, 11
———— Orthopædic Surgery, 11
Bryant's Acute Intestinal Strangulation, 9
———— Practice of Surgery, 11
Bucknill and Tuke's Psychological Medicine, 5
Bulkley's Eczema, 13
Burdett's Cottage Hospitals, 5
———— Pay Hospitals, 5
Burnett on the Ear, 12
Burton's Midwifery for Midwives, 5
Butlin's Malignant Disease of the Larynx, 13
——— Sarcoma and Carcinoma, 13
Buzzard's Diseases of the Nervous System, 9
Carpenter's Human Physiology, 4
Carter (H. V.) on Spirillum Fever, 8
Cayley's Typhoid Fever, 8
Charteris on Health Resorts, 10
———— Practice of Medicine, 8
Churchill's Face and Foot Deformities, 11
Clark's Outlines of Surgery, 11
Clouston's Lectures on Mental Diseases, 5
Cobbold on Parasites, 13
Coles' Dental Mechanics, 13
——— Deformities of the Mouth, 13
Cooper's Syphilis and Pseudo-Syphilis, 14
Coulson on Diseases of the Bladder, 14
Courty's Diseases of the Uterus, Ovaries, &c., 6
Cripps' Diseases of the Rectum and Anus, 14
Cullingworth's Manual of Nursing, 7
———————— Short Manual for Monthly Nurses, 7
Curling's Diseases of the Testis, 13
Dalby's Diseases and Injuries of the Ear, 12
Dalton's Human Physiology, 4
Day on Diseases of Children, 7
—— on Headaches, 9
Dobell's Lectures on Winter Cough, 8
——— Loss of Weight, &c., 8
——— Mont Doré Cure, 8
Domville's Manual for Nurses, 7
Draper's Text Book of Medical Physics, 4
Druitt's Surgeon's Vade-Mecum, 11
Duncan on Diseases of Women, 5
——— on Sterility in Woman, 5
Dunglison's Medical Dictionary, 14
Ebstein on Regimen in Gout, 9
Ellis's Manual for Mothers, 6
———————— of the Diseases of Children, 6
Emmet's Gynæcology, 6
Fayrer's Climate and Fevers of India, 7
———— Tropical Dysentery and Diarrhœa, 7
Fenwick's Chronic Atrophy of the Stomach, 8
———— Medical Diagnosis, 8
———— Outlines of Medical Treatment, 8
Fergusson's Practical Surgery, 10
Flint on Clinical Medicine, 8
—— on Phthisis, 8
Flower's Diagrams of the Nerves, 4
Fox's (C. B.) Examinations of Water, Air, and Food, 5
Fox's (T.) Atlas of Skin Diseases, 13
Frey's Histology and Histo-Chemistry, 4
Galabin's Diseases of Women, 6
Gamgee's Treatment of Wounds and Fractures, 11
Glenn's Laws affecting Medical Men, 4
Godlee's Atlas of Human Anatomy, 3
Goodhart's Diseases of Children, 6
Gorgas' Dental Medicine, 13
Gowers' Diseases of the Brain, 9
———— Diseases of the Spinal Cord, 9
———— Epilepsy, 9
———— Medical Ophthalmoscopy, 9
———— Pseudo-Hypertrophic Muscular Paralysis, 9
Granville on Gout, 9
———— on Nerve Vibration and Excitation, 9
Guy's Hospital Reports, 2
Habershon's Diseases of the Abdomen, 9
———————————— Liver, 9
———————————— Stomach, 9
———————— Pneumogastric Nerve, 9
Hamilton's Nervous Diseases, 9
Hardwicke's Medical Education, 14
Harley on Diseases of the Liver, 9
Harris's Dentistry, 13
Harrison's Lithotomy, Lithotrity, &c., 13
———————— Surgical Disorders of the Urinary Organs, 13
Hartridge's Refraction of the Eye, 12
Heath's Injuries and Diseases of the Jaws, 10
——— Minor Surgery and Bandaging, 10
——— Operative Surgery, 10
——— Practical Anatomy, 3
——— Surgical Diagnosis, 10
Higgens' Ophthalmic Out-patient Practice, 11
Hillis' Leprosy in British Guiana, 13
Holden's Dissections, 3
———— Human Osteology, 3
———— Landmarks, 3
Holmes' (G.) Guide to Use of Laryngoscope, 12
———————— Vocal Physiology and Hygiene, 12
Hood on Gout, Rheumatism, &c., 9
Hooper's Physician's Vade-Mecum, 8
Horton's Tropical Diseases, 7
Hutchinson's Clinical Surgery, 11
———————— Pedigree of Disease, 11
———————— Rare Diseases of the Skin 13
Hyde's Diseases of the Skin, 13
James (P.) on Sore Throat, 12
Jones' (C. H.) Functional Nervous Disorders, 8
Jones (C. H.) and Sieveking's Pathological Anatomy,
Jones' (H. McN.) Aural Surgery, 12
———————— Atlas of Diseases of Membrana Tympani,
———————— Spinal Curvatures, 11
Jones' (T. W.) Ophthalmic Medicine and Surgery, 12
Jordan's Surgical Enquiries, 10
Journal of British Dental Association, 2
———————— Mental Science, 2
Lancereaux's Atlas of Pathological Anatomy, 4
Lee (H.) on Syphilis, 14
Lewis (Bevan) on the Human Brain, 4
Liebreich's Atlas of Ophthalmoscopy, 12
Liveing's Megrim, Sick Headache, &c., 9
London Hospital Reports, 2
Macdonald's (A.) Chronic Disease of the Heart, 6
Macdonald's (J. D.) Examination of Water and Air 4
Mackenzie on Diphtheria, 12
———————— on Diseases of the Throat and Nose, 12
McLeod's Operative Surgery, 10
Maclise's Dislocations and Fractures, 10
———————— Surgical Anatomy, 3
MacMunn's Spectroscope in Medicine, 8
Macnab's Medical Account Books, 14
Macnamara's Diseases of the Eye, 12
Madden's Principal Health-Resorts, 10
Mann's Manual of Psychological Medicine, 5
Marcet's Southern and Swiss Health-Resorts, 10
Marsden's Certain Forms of Cancer, 13
Mason on Hare-Lip and Cleft Palate, 12
——— on Surgery of the Face, 12
Mayne's Medical Vocabulary, 14
Middlesex Hospital Reports, 2
Mitchell's Diseases of the Nervous System, 9
Moore's Family Medicine for India, 7
———————— Health-Resorts for Tropical Invalids, 7
Morris' (H.) Anatomy of the Joints, 3
Mouat and Snell on Hospitals, 5
Nettleship's Diseases of the Eye, 12
Nunn's Cancer of the Breast, 13
Ogston's Medical Jurisprudence, 4
Ophthalmic (Royal London) Hospital Reports,
Ophthalmological Society's Transactions, 2

[*Continued on the next page.*

Oppert's Hospitals, Infirmaries, Dispensaries, &c., 5
Osborn on Diseases of the Testis, 14
——— on Hydrocele, 14
Owen's Materia Medica, 7
Page's Injuries of the Spine, 11
Parkes' Practical Hygiene, 5
Pavy on Diabetes, 9
—— on Food and Dietetics, 9
Pharmaceutical Journal, 2
Pharmacopœia of the London Hospital, 7
Phillips' Materia Medica and Therapeutics, 7
Pollock on Rheumatism, 9
Porritt's Intra-Thoracic Effusion, 8
Purcell on Cancer, 13
Pye-Smith's Syllabus of Physiology, 4
Quinby's Notes on Dental Practice, 13
Ramsbotham's Obstetrics, 6
Raye's Ambulance Handbook, 10
Reynolds' (J. J.) Diseases of Women, 6
——— Notes on Midwifery, 6
Rivington's Rupture of the Urinary Bladder, 14
Roberts' (C.) Manual of Anthropometry, 5
——— Detection of Colour-Blindness, 5
Roberts' (D. Lloyd) Practice of Midwifery, 5
Robinson's Endemic Goitre or Thyreocele, 12
Ross's Diseases of the Nervous System, 9
Roth on Dress: Its Sanitary Aspect, 4
Routh's Infant Feeding, 7
Royal College of Surgeons Museum Catalogues, 2
Royle and Harley's Materia Medica, 7
St. Bartholomew's Hospital Reports, 2
St. George's Hospital Reports, 2
St. Thomas's Hospital Reports, 2
Sanderson's Physiological Handbook, 4
Sansom's Diseases of the Heart, 8
Savage on the Female Pelvic Organs, 6
Sayre's Orthopædic Surgery, 11
Schroeder's Manual of Midwifery, 6
Sewill's Dental Anatomy, 13
Sibson's Medical Anatomy, 3
Sieveking's Life Assurance, 14
Smith's (E.) Clinical Studies, 6
——— Disease in Children, 6
——— Wasting Diseases of Infants and Children, 6
Smith's (Henry) Surgery of the Rectum, 13
Smith's (Heywood) Dysmenorrhœa, 6
Smith (Priestley) on Glaucoma, 12
Snell's Electro-Magnet in Ophthalmic Surgery, 11
Snow's Clinical Notes on Cancer, 13
Southam's Regional Surgery, 11
Sparks on the Riviera, 10
Squire's Companion to the Pharmacopœia, 7
——— Pharmacopœias of London Hospitals, 7
Starkweather on the Law of Sex, 4
Steavenson's Electricity, 10
Stillé and Maisch's National Dispensatory, 7
Stimson on Fractures, 11
Stocken's Dental Materia Medica and Therapeutics, 13
Swain's Surgical Emergencies, 10
Swayne's Obstetric Aphorisms, 6
Taylor's Medical Jurisprudence, 4
——— Poisons in relation to Medical Jurisprudence,
Teale's Dangers to Health, 5
Thompson's (Sir H.) Calculous Disease, 14
——— Diseases of the Prostate. 14
——— Diseases of the Urinary Organs, 14
——— Lithotomy and Lithotrity. 14
——— Stricture of the Urethra, 14
——— Surgery of the Urinary Organs, 14
——— Tumours of the Bladder, 14
Thorowgood on Asthma, 8
——— on Materia Medica and Therapeutics, 7
Thudichum's Pathology of the Urine, 14
Tibbits' Medical and Surgical Electricity, 10
——— Map of Motor Points, 10
Tidy and Woodman's Forensic Medicine, 4
Tilt's Change of Life, 6
—— Uterine Therapeutics, 6
Tomes' (C. S.) Dental Anatomy, 12
Tomes' (J. and C. S.) Dental Surgery, 12
Tosswill's Diseases and Injuries of the Eye, 11
Tuke's Influence of the Mind upon the Body, 5
——— Sleep-Walking and Hypnotism, 5
Van Buren on the Genito-Urinary Organs, 14
Vintras on the Mineral Waters, &c., of France, 10
Virchow's Post-mortem Examinations, 4
Wagstaffe's Human Osteology, 3
Waring's Indian Bazaar Medicines, 7
Warner's Guide to Medical Case-Taking, 8
Waters' (A. T. H.) Diseases of the Chest, 8
Wells (Spencer) Abdominal Tumours, 6
——— on Ovarian and Uterine Tumours, 6
West and Duncan's Diseases of Women, 6
West (S.) How to Examine the Chest, 8
Whistler's Syphilis of the Larynx, 12
Whittaker's Primer on the Urine, 14
Wilks' Diseases of the Nervous System, 8
Wilson's (Sir E.) Anatomists' Vade-Mecum, 3
Wilson's (G.) Handbook of Hygiene, 5
——— Healthy Life and Dwellings, 5
Wilson's (W. S.) Ocean as a Health-Resort, 10
Wolfe's Diseases and Injuries of the Eye, 11
Year Book of Pharmacy, 2
Yeo's (G. F.) Manual of Physiology, 4
Yeo's (J. B.) Contagiousness of Pulmonary Consumption, 8
Zander Institute Mechanical Exercises, 10

The following CATALOGUES issued by J. & A. CHURCHILL will be forwarded post free on application :—

A. *J. & A. Churchill's General List of about* 650 *works on Anatomy, Physiology, Hygiene, Midwifery, Materia Medica, Medicine, Surgery, Chemistry, Botany, &c., &c., with a complete Index to their Subjects, for easy reference.* N.B.—*This List includes* B, C, & D.

B. *Selection from J. & A. Churchill's General List, comprising all recent Works published by them on the Art and Science of Medicine.*

C. *J. & A. Churchill's Catalogue of Text Books specially arranged for Students.*

D. *A selected and descriptive List of J. & A. Churchill's Works on Chemistry, Materia Medica, Pharmacy, Botany, Photography, Zoology, the Microscope, and other branches of Science.*

E. *The Half-yearly List of New Works and New Editions published by J. & A. Churchill during the previous six months, together with particulars of the Periodicals issued from their House.*

[Sent in January and July of each year to every Medical Practitioner in the United Kingdom whose name and address can be ascertained. A large number are also sent to the United States of America, Continental Europe, India, and the Colonies.]

AMERICA.—*J. & A. Churchill being in constant communication with various publishing houses in Boston, New York, and Philadelphia, are able, notwithstanding the absence of international copyright, to conduct negotiations favourable to English Authors.*

LONDON: NEW BURLINGTON STREET.

Pardon & Sons, Printers,] [*Wine Office Court, Fleet Street, E.C.*