An excellent anesthetic, which has been very largely used by the Author, can be made by mixing equal parts of pure Chloroform and Ether. No special apparatus is required for its employment: though the flannel mask recommended by Dr. Skinner, with the drop bottle, will be found convenient. The only precaution necessary is that there should be no impediment to the free admission of air.—The Chloroform Committee of the Royal Medical and Chirurgical Society has recommended a mixture composed by measure of three parts of Ether, two of chloroform, and one of alcohol. That this is safer than pure chloroform cannot be doubted; but it has seemed to the Author less useful than this agent with an equal quantity of ether.

In apparent death from any anesthetic; artificial respiration, after the plan recommended by Dr. Silvester, ought to be tried. The body is to be laid on its back with the head and shoulders slightly raised. The mouth and nostrils are to be cleansed from mucus; and the tongue should be drawn firmly forwards so as to keep the tip well protruded at the side of the mouth. Then the operator is to compress, for two or three seconds, the front and sides of the chest by the patient’s own arms. Thus the medicated vapour will be partly expelled from the lungs; while upon the pressure being suddenly removed, the elastic walls of the chest will expand, and give the primary impetus to respiration. To assist expansions to the utmost the ribs should be drawn upwards by means of the pectoral muscles. This is effected by the operator grasping the arms just above the elbows, and drawing them upwards until they nearly meet above the head. Then they must be lowered, and replaced at the sides; at the same time making moderate pressure with them, for a couple of seconds, against the chest walls. This process is to be repeated fifteen times in the minute. At the same time the face ought to be well fanned. No attempt should be made to administer stimulants by the mouth.

In some instances, galvanism of the phrenic nerve, diaphragm, and intercostal muscles would be useful in keeping up the movements of respiration; one pole of the battery being applied over the outer edge of the sterno-mastoid muscle just above the clavicle, while the other is pressed deeply into the seventh intercostal space. The diaphragm must be made to contract and relax alternately, by interrupting the currents at different intervals.

While attempts are thus being made to oxygenate the blood, an assistant is to rub the limbs from the extremities towards the heart. If no respiratory efforts supervene, the face and chest are to be dashed with cold water, or with hot and cold water alternately. When success follows this plan, the temperature of the body must be maintained by friction, hot blankets, the warm bath, &c.


The solution of Acetate of Morphia as used for injection under the skin can be well made by mixing ten grains of this salt with one fluid dram of distilled water. It is unnecessary to rub up the salt with hot distilled water and acetic acid, subsequently neutralizing the latter with liquor potassa. The solubility of the acetate of morphia in water is 1 in 6; of the hydrochlorate, 1 in 20.

Each six minims of a solution thus made will contain one grain of acetate of morphia. For first injections not more than one minim and a half should be used; as it is certain that this narcotic acts more powerfully when thus employed, than when taken into the stomach. In diseases which are continuously painful the case given by an injection will last for about twelve hours. To relieve the suffering of advanced cancer, &c., the injection may be advantageously given, night and morning, for many months.

A solution of Bineconate of Morphia for hypodermic injections is prepared by Mr. Peter Squire. Each minim of this concentrated solution is equivalent to min. 10 of the officinal tincture of opium, or to one-sixth of a grain of acetate of morphia.

The subcutaneous injection of morphia often causes troublesome nausea and retching, which may continue for 18 or 20 hours. This unpleasant result can be obviated, according to Dr. John Hanley, by administering a small quantity of atropine (1/4 of a grain) with the morphia.

The subcutaneous injection of Atropine is sometimes useful in cases of intestinal obstruction, asthma, tetanus, neuralgia, chorea in the adult, &c. Great caution is necessary: not more than two minims of the officinal Liquor Atropis
Appendix of Formulae.

(= to gr. 1/2), or of the Liquor Atropinis Sulphatis, should be employed at first. During a severe paroxysm of asthma, the use of two minims of the liquor atropinis mixed with the same quantity of the morphia solution will often produce satisfactory results. The good effect is increased in some cases by having recourse to this injection while the patient is unconscious from the inhalation of a mixture of ether and chloroform.

Chloroform may be used in the same manner. The injection of ten or fifteen minims often effects a cure for the time in pleurodynia, neuralgia, sciatica, &c. It has the disadvantage of sometimes producing an irritable ulcer, which may be slow in healing.

A solution of Aconitum may be made thus: Aconitum, gr. 1; Spiritus Rectificat. min. 10; Aquae Distillatae, ad fl. drs. 2. Mix. For first injections not more than two minims should be employed: the dose may afterwards be safely increased to four minims (gr. 1–30). It is better, though not absolutely necessary, to make the injection at the seat of pain. The local tingling which follows is often severe; but this is of no consequence compared to the neuralgic pain for which it is used.

315. Morphia Draughts, &c.

B. Liquoris Morphia Hydrochloratis, min. 30 (= to gr. 1/2 of the salt); Syrupi Limonis, ad. dr. 1; Tinctura Hyoscyami, fl. dr. 1; Aquae Camphorae, fl. oz. 1. Mix. To be taken at bedtime. In insomnia with pain.

B. Liquoris Morphia Hydrochloratis, min. 15–30; Spiritus Chloroformii, fl. dr. 1 (= to min. 3 of chloroform); Spiritus Aethericis, min. 30; Tinctura Belladonnae, min. 20; Tinctura Cardamomi Compositae, fl. dr. 1; Aquæ, ad fl. oz. 1. Mix. To be taken every two hours (the patient being watched) until the pain ceases. Useful in facilitating the passage of gallstones.

B. Liquoris Morphia Hydrochloratis, min. 40; Acidi Hydrocyanici Dilutis, min. 20; Syrupi Scille, fl. drs. 6; Tinctura Benzoini Compositae, fl. oz. 1; Mucilaginis Aesculii, ad fl. oz. 6. Mix. One tablespoonful every three or four hours. In many irritable coughs.

316. Chloral Draught.

Hydrate of Chloral it an excellent hypnotic, and is supposed by Liebreich to be decomposed by the alkaline blood yielding chloroform as the active agent. It has a nauseous taste, and sometimes causes vomiting, and on this account is usually disguised for administration. The dose is from 20–60 grains, and it should be given when the patient is settled in a position for sleep.

Croton Chloral, also introduced by Liebreich, is supposed to have special influence on pain in the region of the fifth nerve.

B. Chloral Hydrate, gr. 20–60; Syrupi Toluani vel Aurantii, fl. dr. 1; Aque Menthae Piperitae, ad fl. oz. 1 or 1/2. Mix for a night draught.

317. Chloroform and Opium, or with Morphia and Indian Hemp.

B. Chloroformi, min. 6–10; Extracti Opii Liquidi, min. 15–30; Tinctura Belladonnae, min. 10–20; Syrupi Rhizodii, fl. dr. 1; Mucilaginis Tragacanthi, fl. oz. 1. Mix, for a night draught. In severe colic and other spasmodic disorders.

B. Liquoris Morphia Hydrochloratis, min. 20; Tincturae Chloroformi Compositae, min. 30; Tincturae Cannabis Indicae, min. 20; Pulveris Tragacanthae Compositae, gr. 10; Spiritus Aethericis, min. 40; Acidi Hydrocyanici Dilutis, min. 4; Tincturae Hyoscyami, fl. dr. 1; Aquæ, ad fl. drs. 12. Mix, for a night draught. In many chronic diseases attended with pain or restlessness.

The medicine called Chlorodyne probably consists essentially of chloroform, Indian hemp, morphia, and hydrocyanic acid. In the Canada Lancet (16 October, 1864) Dr. W. E. Bowman gives the following formula for its preparation:—Take of Chloroform, half a fluid ounce; Sulphuric Ether, ninety minims; Oil of Peppermint, eight drops; Resin of Indian Hemp, six grains; Capsicum, two grains. Mix, shake occasionally, and allow it to stand for a few days. Take of Muriate of Mor-
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phia sixteen grains, dissolved by the aid of heat in two fluid drachms of water; to
which when cold, add of Scheele's Hydrocyanic Acid, sixty-five minims; Perchloric
Acid, one fluid drachm; Treacle, two fluid ounces. Add this gradually to the first
mixture, and then make the whole measure four fluid ounces by the addition of
treacle or water.—Each dose of thirty minims contains of chloroform in min. 4, ether
min. 1, extract of hemp, gr. \( \frac{1}{12} \), hydrochlorate of morphia, gr. 4, and of Scheele's
acid, min. 1.

Mr. Squire gives for Chlorodyne a formula which contains no Indian Hemp
or Capsicum, and a smaller dose of Morphia. Mr. ED. SMITH assigns to it the fol-
lowing composition:

B. Chloroformi, fl. dr. 4; Morphia mur., gr. 20; Aether. rectf. fl. dr. 2;
Ol. Mentha Pip., min. 8; Acid. Hydrocyanici dil. fl. dr. 4; Tinct. Capsici,
fl. dr. 6; Mist. Acacie, fl. oz. 1; Theriacæ, ad fl. oz. 5.

318. Brandy and Egg Mixture, with Opium.

B. Mist. Spiritus Vini Gallieci (See P. 17) fl. oz. 1; Extracti Opii Liqui-
di, min. 5—10; Spiritus Chloroformi, min. 30. Mix. *To be taken every four hours.
In exhaustion from pain.

319. Tolu and Camphorated Opium.

B. Tinctura Toluanae, fl. drs. 2; Syrupi Tolutani, fl. oz. 1; Tinctura Cam-
phoræ Composite, fl. drs. 4 (= to gr. 1 of opium); Mucilaginis Tragacanthi, ad fl.
oz. 8. Mix. Two tablespoonfuls three times a day. For old people, where the
nasal secretion from the bronchi is excessive.

320. Cimicifuga Racemosa, or Black Snakeroot.

B. Tinctura Actaea Racemoseae, min. 30—fl. drs. 2; Aque, ad fl. oz. 1. Mix,
for a draught. To be administered every three or four hours until nausea ensues
or the pulse becomes lowered. This drug possesses narcotic and eliminative pro-
erties; and is useful in chronic rheumatism, lumbago, chorea, obscure nervous pains,
and in buckache from uterine disturbance.

321. American Hellebore.

B. Tinctura Veratri Viridis (a saturated solution) min. 5—10; Aque, fl. oz. 1.
Mix. This draught may be given every three hours, adding one drop of tincture
to each dose, until the pulse becomes sufficiently lowered or nausea is produced.
The latter is readily counteracted by small doses of morphia. It is a valuable arte-
rial sedative; and is particularly used by American physicians in inflammations of
the lungs, pleura, or peritonæum, and in acute rheumatism.

322. Lobelia and Ether.

B. Spiritus Ammoniæ Aromatici, fl. drs. 2; Tinctura Lobelieæ Æthereae, fl.
drs 3—6; Tinctura Aconiti, min. 30; Aque Camphoræ, ad fl. oz. 8. Mix. One-
sixth part twice or thrice daily. As a sedative in some cases of asthma.

323. Stramonium and Henbane.

B. Extracti Stramonii, gr. 3; Extracti Hyoscyami, gr. 20; Extracti Lupuli,
gr. 40. Mix, and divide into twelve pills. One to be taken every four hours until
relief is obtained. In chronic disorders attended with suffering, in diseases of the
nervous system accompanied with pain and restlessness, and in the dyspnæa of phthisis
and emphysema.

B. Tinctura Stramonii, fl. drs. 1—2; Tinctura Hyoscyami, fl. drs. 3—6;
Tinctura Cantharidis, fl. drm. 1; Spiritus Chloroformi, fl. drs. 3; Aque, ad fl.
oz. 8. Mix. One-sixth part three times a day. In some cases of asthma.
324. Opium and Ipecacuanha.

R. Extracti Opii, Pulveris Ipecacuanhae, as gr. 1; Potassae Nitratis, gr. 8; Glycerini, sufficient to make a mass. Divide into two pills, and order them to be taken at bedtime. A good narcotic and diaphoretic. It is preferable to the official Compound Powder of Ipecacuanha, as the nitrate of potash acts better than the sulphate.

R. Vinæ Ipecacuanhae, q. d. 2¼; Extracti Opii Liquidi, min. 30; Syrææ Tolutani, fl. d. 5; Mucilaginis Tragacanthæ, fl. oz. 1. Mix. One teaspoonful every two or three hours. In chronic cough.

325. Henbane, Camphor, and Hop.

R. Extracti Hyoscyami, gr. 40—60; Camphoro Lapi, as gr. 20. Mix, divide into 16 pills, and order three to be taken every night at bedtime. An excellent sedative for hysterical and hypochondriacal patients suffering from sleeplessness. Useful also in some forms of inanity.

R. Spiritus Camphoræ, min. 30; Tinctura Hyoscyami, Tinctura Lapi, as fl. dr. 1; Mucilaginis Acaciae, fl. oz. 1. Mix, for a draught to be taken at bedtime.


R. Extracti Belladonnae, gr. 5; Zinci Sulphatis, gr. 30; Extracti Gentianae, gr. 90. Make a mass, divide into twenty pills, and order one to be taken three times a day. In cases where a sedative and tonic action is to be produced. Especially useful in some diseases attended with irritability of the urinary organs. Also in many spasmodic coughs. See F. 92.

R. Extracti Belladonnae, gr. ½; Extracti Quassiae, gr. 2. Mix into a pill, to be taken night and morning. In epilepsy. Requires to be given for a long period.

R. Tinctura Belladonnae, min. 10—15; Spiritus Ammonis Aromaticæ, min. 20; Aqua, fl. oz. 1. Mix. To be taken three or four times a day. In heart disease, with irritability and palpitation.

R. Camphoro, gr. 5; Extracti Belladonnae, gr. ½; Extracti Conii, gr. 4; Spiritus Rectificati, sufficient to make two pills. To be taken every night at bedtime. In spasmatick convulsions, as well as in certain spasmodic affections of the air passages.

R. Liquoris Atropiae, fl. dr. 2. One drop (= gr. 1-120) in a tablespoonful of briskly and water, night and morning. In epilepsy. The dose to be increased by one drop every second or third week. A preparation of zinc may be given at the same time, if desired.

327. Camphor, Opium, and Blue Pill.

R. Camphoro, gr. 5; Extracti Opii, gr. 1; Pilulæ Hydargyri, gr. 4. Mix, divide into two pills, and order them to be taken at bedtime. In restlessness with congestion of the liver and irritability of the sexual organs. Also in venereal sores with nocturnal emissions.

328. Codeia and Assafetida.

R. Codeiae, gr. ½; Pilulæ Assafetidæ Compositæ, gr. 5. Mix into a pill, to be taken every night at bedtime. Especially useful in attacks of spasmodic cough, dyspnœa, &c.

329. Morphia and Assafetida.

R. Morphiae Hydrocholoratis, gr. 2; Assafetidæ, gr. 30; Camphoro, gr. 20. Make a mass, divide into twelve pills, and order one to be taken at bedtime. A good stimulant and antispasmodic.
330. Aconite with Guaiacum, Mercury, or Opium.

R. Tinctura Aconiti, min. 20—40; Spiritus Ätheris, fl. drs. 4; Mixture Guaiaci, ad fl. oz. 8. "Mix. One-sixth part every six hours. As an anodyne, stimulant, and alterative in chronic rheumatism, neuralgia, &c."

R. Extracti Aconiti, gr. 1—3; Pillulae Hydaraegyri Subchloridi Compositae, gr. 3. Make into a pill, and order it to be taken every night at bedtime. In sleeplessness from a syphilitic taint.

R. Extracti Aconiti, Extracti Opii, as gr. 8; Extracti Hyoscyami, gr. 16. Mix, and divide into eight pills. One to be taken every four, six, or eight hours. In some acute inflammations,—as peritonitis, pleurisy, ovaritis, &c.

331. Opium and Sugar of Milk.

R. Pulveris Ipecacuanhae Compositi, gr. 1; Sacchari Lactis, gr. 120. "Mix, and divide into four powder. One to be taken every night, beaten up in a teaspoonful of cream. A safe opiate for infants from two to six weeks old."

R. Tinctura Opii, min. 1; Sacchari Lactis, oz. 1; Muscaginis Traganthae, Acque Anethi, as fl. drs. 4. "Mix. One teaspoonful twice or thrice in the twenty-four hours. To relieve the painful diseases of early life."

332. Tincture of Henbane.

R. Tinctura Hyoscyami, fl. oz. 1. One teaspoonful in a wineglassful of water every night at bedtime. The dose may be gradually increased until from one to three fluid ounces can be taken every night. In some forms of epilepsy.

333. American Wild Cherry.

R. Tincturae Pruni Virginianae, fl. drs. 3—6; Acqua, ad fl. oz. 8. "Mix. One eighth part every four or six or eight hours. The dose of the Infusion is one ounce, at the same intervals. As a sedative and tonic in cases of cardiac weakness with insufficiency of action; in valvular disease with dilatation; mitral regurgitation; chronic bronchitis with valvular disease or dilated ventricles; atomic dyspepsia; intestinal irritability, &c. The action is less powerful than that of digitalis; but it is often better borne, and can be continued for a longer time. After a course of the American Wild Cherry, quinine and steel will often prove useful, though previously they may have been injurious.

334. Preparations of Digitalis.

R. Infusi Digitalis, fl. drs. 12; Acqua Anethi, ad fl. oz. 8. "Mix. One sixth part every two, three or four hours. Recent experiments tend to prove that digitalis is a cardiac stimulant and tonic for a time. In feeble and irregular action of the heart this drug proves of great value; as it also does in dilatation and hypertrophy of the left side of the heart. Digitalis is very serviceable in cardiac dropsy, when there is a feeble and frequent and irregular pulse, with a scanty secretion of high-coloured urine; asasmuch as it gives increased force to the heart's contractions, while it has a diuretic action on the kidneys. Digitalis had better be avoided in examples of fatty degeneration of the heart. In some cases of delirium tremens large doses have a very good effect."

R. Tincturae Digitalis, fl. drs. 1—2; Tincturae Cardamoni Compositae, fl. drs. 6; Acidii Hydrocyanici Diluti, min. 30; Acqua Camphorae, ad fl. oz. 9. "Mix. One sixth part three times a day. In some forms of cardiac disease with irritability of the stomach."
335. Hemlock and Henbane, &c.

R. Extracti Conii, Extracti Hyoscyami, Pilulae Rhei Compositae, sã gr. 3. Mix, and divide into two pills. To be taken at bedtime. To relieve sleeplessness and constipation. In some forms of asthma.

R. Extracti Conii, Extracti Hyoscyami, Pilulae Hydrargyri, sã gr. 3; Pulveris Ipecacuanhae, gr. 1. Mix, and divide into two pills. To be taken at bedtime.

336. Hemlock and Dover’s Powder.

R. Extracti Conii, gr. 36; Pulveris Ipecacuanhae Compositi, gr. 24. Mix, and divide into twelve pills. One to be taken every three or four hours. To relieve the pain arising from malignant disease.

337. Henbane and Indian Hemp, &c.

R. Extracti Cannabis Indicae, gr. 1—1; Extracti Belladonnae, gr. 1; Extracti Hyoscyami, gr. 4. Make into a pill. To be taken every twelve or twenty-four hours. The efficacy of this pill can sometimes be increased by giving with it a draught containing some spirit of chloroform or spirit of ether.

338. Iodoform Pills and Suppositories.

R. Iodoformi, gr. 2—6; Extracti Conii, gr. 4. Mix. Divide into two pills, and order them to be taken at bedtime. In painful diseases of the stomach. The Author has once or twice found a full dose of iodoform relieve a paroxysm of asthma.

R. Iodoformi gr. 3—8; Olei Theobromae, gr. 20. Mix, for a suppository. As a local anesthetic in cancerous and other painful diseases of rectum. The anodyne action of iodoform is uncertain.

339. Narcotic Enema.

R. Liquoris Morphiae Acetatis, min. 20—60; Tincturæ Catechu, min. 40; Vini Ipecacuanhae, min. 30; Mucilaginis Amyli, fl. oz. 2. Mix. The bowel should be washed out with warm water before the administration of this enema. In diarrhoea, tenesmus, strangury, &c.

R. Extracti Opii Liquidi, min. 20—fl. drm. 1; Tincturæ Belladonnae, min. 15—30; Mucilaginis Amyli, fl. oz. 2. Mix. In cancer of uterus, rectum, &c.

340. Opium Suppositories.

R. Pulveris Opii, gr. 1—2; Saponis Duri, gr. 10. Mix, for a suppository. To allay pain or irritation about the pelvic viscera.

R. Extracti Opii, gr. 1—3; Extracti Belladonnae, gr. 1; Olei Theobromae, gr. 20. Mix into a suppository. Especially useful in diseases of the bladder, uterus, and rectum.

341. Lettuce Opium.

R. Lactucae gr. 8—10. To be divided into two pills, to be taken at bedtime. A doubtful narcotic. Has been chiefly used as an anodyne in phthisis, or where opium cannot be borne.
342. Indian Hemp, Aconite, and Ether.

R. Tinctura Cannabis Indicae, min. 20; Spiritus Juniperi, min. 30; Spiritus Aetherae, min. 45; Tinctura Aconiti, min. 10; Mucilaginis Acaciae, ad fl. drs. 12. Mix, for a draught. To be taken at bedtime. In neuralgic dysmenorrhœa, &c.

343. Opium, or Morphia, and Ipecacuanha.

R. Extracti Opii, gr. 1—4, vel Morphiae Hydrochloratis, gr. 1—1; Extracti Hyoscyami, gr. 5. Make into two pills, to be taken at bedtime. For the relief of severe pain, and to afford sleep in lingering disease.

344. Opium and Belladonna.

R. Extracti Opii, gr. 1; Extracti Belladonnae, gr. 4; Extracti Conii, gr. 3. Make into a pill, to be taken every three or four hours. In intestinal obstruction. And in other cases where it is necessary to relieve severe pain without inducing constipation. The belladonna also increases considerably the hypnotic action of the opium.

345. Opium and Capsicum.

R. Extracti Opii, gr. 1—2; Capsici Fructus, gr. 2; Extracti Hyoscyami, gr. 4. Make into two pills, to be taken every night at bedtime. In those diseases where opium is needed, but where it is not well borne, owing to its producing headache, sickness, &c. The stimulating effect of the capsicum will often ward off these unpleasant results.

346. Morphia and Squill Linctus.

R. Syrupi Scillae, Syrupi Rhaedos, 5a fl. drs. 10; Aque Laurocerasi, min. 25; Tinctura Benzoini Compositae, fl. drs. 3; Licorius Morphiae Hydrochloratis, fl. drm. 1. Mix, and label,—"A small teaspoonful to be taken frequently, if the cough is troublesome."

347. Compound Linctus.

R. Spiritus Chloroformi, fl. drs. 3; Vini Ipsecanthae, fl. drs. 2; Liquorius Morphiae Acetatis, fl. drm. 1; Acidii Hydrocyanici Diluti, min. 15; Tinctura Conii, fl. drs. 2; Syrupi Tollutani, ad fl. oz. 3. Mix, and label,—"One teaspoonful every two or three hours, until the cough is relieved." See F. 246, 247.

XV. REFRIGERANTS AND SALINES.

348. Saline Draughts.

R. Soda Bicarbonatis, gr. 20; Aque Laurocerasi, min. 10; Syrupi Limonis, fl. drm. 1; Aque, ad fl. oz. 2. Mix. An effervescing draught is to be made by the addition of a tablespoonful of lemon juice, or of eighteen grains of citric acid. To be taken every four or six hours. In fever with nausea.

R. Spiritus Aetherae Nitrosi, fl. drs. 13—18; Vini Colchici, fl. drm. 1; Aque Camphorae, ad fl. oz. 8. Mix. Two tablespoonfuls every four hours.
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R. Potassæ Nitris, gr. 40; Væl Potassæ Citratis, gr. 100; Vini Antimoniale, fl. dr. 1; Liquoris Ammoniaci Acetatis, fl. drs. 14; Aquæ Camphoræ, ad fl. oz. 8. Mix. One sixth part every four hours.

319. Saline with Excess of Ammonia.

R. Liquoris Ammoniaci Acetatis, fl. drs. 10; Spiritūs Ammoniaci Aromatici, fl. drs. 3; Syrupi Limonis, fl. drs. 6; Tinctūra Aconiti, min. 30; Aquæ, ad fl. oz. 8. Mix. One sixth part every four hours. In the early stages of fever, tonsillitis, acute pneumonia, etc.

350. Dr. Stevens’ Saline Mixture.

R. Sodii Chloridi, gr. 20; Potassæ Chloratis, gr. 7; Sodæ Carbonatis, gr. 30. Aquæ, fl. dr. 12. Mix. To be taken every half hour. In malignant cholera.

351. Colchicum and Magnesia.

R. Vini Colchici, fl. drs. 1½; Magnesia Carbonatæ, gr. 120; Spiritūs Ammoniaci Aromatici, fl. drs. 3; Tinctūra Hyoscyami, fl. drs. 4–6; Aquæ Camphoræ, ad fl. oz. 8. Mix. One sixth part night and morning. In slight cases of gout, etc.

352. Colchicum and Chlorate of Potash.

R. Vini Colchici, fl. drs. 2; Potassæ Chloratis, gr. 120; Liquoris Ammoniae Citratis, fl. dr. 20; Aquæ Camphoræ, ad fl. oz. 8. Mix. One sixth part three times a day. In gout with heat and dryness of the skin.

353. Dorax and Nitric Ether.

R. Boracicæ, gr. 80; Spiritūs Aerethis Nitrosi, fl. drs. 3; Syrupi Papaveris, fl. drs. 6; Infusi Lini, ad fl. oz. 8. Mix. One sixth part every six hours.


R. Ammoniae Carbonatis, gr. 30; Liquoris Sodæ Chloratis, fl. dr. 1; Infusi Serpentariae, fl. oz. 8. Mix. One sixth part every six hours. As a diaphoretic and stimulant in the low stage of continued fever. See F. 368.


R. Potassæ Bicarbonatis, oz. ¼–½; Syrupi Limonis, fl. oz. 1; Aquæ, ad O. 2. Mix, for the day’s drink. Very useful in the uric acid diathesis, in acute rheumatism, etc. A drink called “Constitution water” owes its efficacy to the bicarbonate of potash it contains.

356. Cream of Tartar Drink.

R. Potassæ Tartaratis Acidæ, oz. 1; Olei Limonis, min. 15; Sacchari Albi, oz. 2; Aquæ Bullicentæ, O. 2. Mix. To be used when cold, as a common drink. In simple fever, with constipation and great thirst.

357. Hydrochloric Acid Drinks.

R. Acidi Hydrochlorici Diluti, fl. drs. 2–3; Mellis Depurati, oz. 1; Decocti Hordei, O. 2. Mix, for the daily drink. In typhus, etc.

R. Acidi Hydrochlorici Diluti, fl. drs. 2; Potassæ Chloratis, gr. 180; Syrupi Zingiberis, fl. oz. 1; Decocti Hordei, O. 2. Mix. A valuable drink in some cases of fever.
358. Saline Lemonade.

B. Soda Chloride, gr. 200; Potassium Chlorate, gr. 240; Soda Tartarate, gr. 100; Soda Phosphoric, gr. 50; Sucei Limonii recentis, fl. oz. 6; Syrupui Limonic, fl. oz. 14; Aqua, O. 7. Mix. To be taken ad libitum, iced or not, as is most agreeable, in cholera and choleraic diarrhea.

359. Phosphoric Acid Drink.

B. Acidis Phosphorici Dilutii, fl. drs. 3; Glycerinis, fl. oz. 1; Decoct Hordei, O. 2. Mix. An efficacious drink for assuaging thirst in some diseases attended with nervous exhaustion. It was recommended by Dr. Parke and Sir Thomas Watson as useful in diabetes; but according to Grieminger it positively increases the quantity of sugar excreted.

360. Chlorate of Potash Drinks.

B. Potassae Chloratis, gr. 60; Syrupi Hemidami, fl. oz. 1; Aquae, O. 1. Mix. In the eruptive fevers, some inflammations, &c.

B. Potassae Chloratis, oz. 1; Potassae Bicarbonatis, oz. 2–4. Mix, and divide into eight powders. One to be dissolved in a pint of barley water for the day’s drink. In acute rheumatism.

XVI. STIMULANTS.

361. Ammonia and Bitters.

B. Ammonia Carbonatii, gr. 30; Spiritus Myristici, fl. drs. 2; Tinctura Chloroformi Composita, fl. drm. 1; Tinctura Cardamomi Composita, fl. drs. 6; Infusis Caryophylli, ad fl. oz. 8. Mix. One sixth part every four or six hours. In debility with nausea and flatulence. Also in cyspelas, tonsillitis, scarlet fever, &c.

B. Spiritus Ammonii Aromatici, fl. drs. 3; Tinctura Lupuli, fl. drs. 6; Spiritus Etheris, fl. drs. 3; Tinctura Gentianae Composita, fl. oz. 1; Infusis Senii, ad fl. oz. 8. Mix. One sixth part twice or thrice daily. In phosphuria with constipation.

B. Spiritus Ammonii Aromatici, fl. drs. 3; Aqve Laurocerasi, fl. dr. 1; Soda Bicarbonatii, gr. 60; Tinctura Cumae, fl. drs. 6; Aqve Anthei, ad fl. oz. 8. Mix. One sixth part two or three times a day. To relieve nausea, or vomiting, with heartburn.

B. Tincturae Valerianae Ammoniacae, fl. drs. 3; Tincturae Rhei, fl. drs. 6; Tincturae Lavandulae Compositae, fl. oz. 1; Aqve Pimentae, fl. oz. 8. Mix. One sixth part when oppressed with languor or faintness. In hypochondriasis and hysteria.

362. Ammonia in Effervescence.

B. Ammonia Carbonatii, gr. 120; Acidis Hydrocyanici Dilatii, min. 20; Tinctura Cardamomi Composita, fl. drs. 6; Infusi Auranti, ad fl. oz. 8. Mix. One sixth part to be made into an effervescing draught with one tablespoonful of fresh lemon juice, or with eighteen grains of citric acid. To be taken twice or thrice daily. In irritability of the stomach, with depression.
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R. Spiritus Ammoniaci Aromatici, fl. drs. 4; Potassae Bicarbonatis, gr. 120; Spiritus Chloroformi, fl. drs. 6; Tinctura Hyosciami, fl. drs. 8; Infusi Cascarille, ad fl. oz. 8. Mix. One sixth part every four hours, made into an effervescing draught with one tablespoonful of lemon juice. In irritable stomach with undue acidity of the secretions.

363. Formiate of Ammonia.

B. Ammonii Formiatis, gr. 30; Aque, fl. oz. 3. Mix. One sixth part three times a day. Recommended by Dr. Ramskill in chronic paralytic disease, accompanied by general torpor. Also in reflex paralysis, and in some forms of epilepsy. It is contra-indicated where there is active disease in the nervous centres, and in cases where the stomach is irritable.

364. Phosphate of Ammonia and Ether.

B. Ammonii Phosphatis, gr. 60—100; Spiritus Ætheris, fl. drs. 3; Infusi Caryophylli, ad fl. oz. 8. Mix. One sixth part three times a day. In debility with tendency to gout or rheumatism. Also in hypochondriasis.

365. Hydrochloric Acid and Ether.

B. Acidii Hydrochlorici Diluti, fl. dram. 1; Spiritus Ætheris, fl. drs. 3; Syrups Aurantii, fl. drs. 6; Infusi Aurantii, ad fl. oz. 3. Mix. One sixth part every six hours. In continued fever, and in cases where the expired air is ammoniacal.

366. Cacuput Oil and Cloves.

B. Olei Cajuputi, min. 5; Pulveris Tragacanthae Compositi, gr. 60; Aque Distillate, fl. drs. 2. Beat thoroughly together, and add—Infusi Caryophylli, fl. drs. 10. Mix. To be taken occasionally. In hysteria, flatulent colic, and many spasmodic diseases.

B. Olei Cajuputi, min. 4; Sacchari Lactis, gr. 120. Beat up thoroughly, and add—Decocti Aloes Compositi, fl. oz. 1½. Mix. To be taken occasionally, early in the morning. As a stimulant and laxative, where there is a tendency to flatulence and a loaded rectum.

367. Ether and Brandy.

B. Spiritus Ætheris, fl. drs. 3; Spiritus Vini Gallici, fl. drs. 12; Infusi Cinchone Flave, ad fl. oz. 8. Mix. One sixth part every four or six hours. At the commencement of convalescence from many acute diseases.

B. Spiritus Chloroformi, fl. drs. 6; Mixture Spiritus Vini Gallici (F. 17), fl. oz. 8. One sixth part every six hours. In the stages of low fever with restlessness.

368. Solution of Chlorinated Soda.

B. Liquoris Sodae Chloratae, fl. drs. 1—2; Syrups Tolutani, fl. oz. 1; Tinctura Serpentinum, fl. drs. 6; Aque, ad fl. oz. 8. Mix. One sixth part every six hours. In low fever this mixture will clean the tongue, promote the action of the skin and kidneys, correct the offensive state of the evacuations, and rouse the patient. See F. 354.

B. Liquoris Sodae Chloratae, fl. dram. 1; Tinctura Cinchone Compositae, fl. drs. 6; Spiritus Vini Gallici, fl. drs. 12; Tinctura Cantharidis, min. 40; Aque, ad fl. oz. 8. Mix. One sixth part every three or four hours. In low fever, with great prostration.
369. Sumbul, Quinine, Hop, &c.

B. Tinctura Sumbulis, fl. dra. 1—3; Infusi Lupuli, ad fl. oz. 8. Mix. One sixth part three times a day. *In some cases of hysteria, epilepsy, threatened delirium tremens, &c., where a stimulant and antisomnolent is needed.* See F. 95.

B. Tinctura Quinina, Tinctura Rhei, Tinctura Lupuli, ad fl. dra. 4. Mix. One teaspoonful in a wineglassful of water twice a day. *In dyspepsia from weakness of the digestive organs, and constipation.* See F. 365.


Barth’s Patent Oxygen Water is sold in bottles which contain nearly half an imperial pint of distilled water, with about 13.5 cubic inches, or 4.6 grains, of gaseous oxygen. The contents of two, three, or four bottles may be taken daily. The effect is to promote digestion, to render the secretions and excretions healthy, to improve the condition of the blood, and possibly to control nervous force.

Peroxide of Hydrogen may be regarded as water supersaturated with oxygen. A solution charged with ten volumes of oxygen is usually employed; the dose varying from fluid drachma 1—4, in two ounces of water, two or three times a day. Useful in many diseases attended with dyspnoea,—as chronic bronchitis, pulmonary condensation, valvular cardiac disease with congestion of the lungs, some forms of asthma, laryngitis, hooping cough, &c. Also in dyspepsia, congestion of the liver, possibly in diphtheria and croup, as well as in strumous and other ulcerations. It appears likewise to favour the action of steel and cold liver oil; which remedies, however, should not be given at the same hour that the peroxide is administered.

Oxygen Gas can be best inhaled by using a large vulcanite bag filled with oxygen and air—1 to 4. This mixture is to be inhaled for half an hour once or twice a day; slowly inspiring it at short intervals, and filling the lungs as much as possible.

Messrs. Robbins & Co. have prepared a powder which they call the "Patent Oxygenator." On placing a wineglassful of this material in the vase of Dr. Beigel’s Universal Inhaler, and pouring over it half a pint of boiling water, pure oxygen will be evolved. Inhalation may be practised once or twice a day, for ten or fifteen minutes at a time.

XVII. TONICS.

371. Bark and Ammonia.

B. Ammoniae Carbonatis, gr. 30; Tinctura Lavandulae Composite, fl. oz. 1; Infusi Cinchonae Flaves, ad fl. oz. 8. Mix. One sixth part every six hours.

B. Ammoniae Phosphatis, gr. 60; Tinctura Aconiti, min. 40; Tinctura Cinchonae Composite, fl. dra. 6; Aque Menthes Piperitez, ad fl. oz. 8. Mix. One sixth part three times a day.

B. Ammoniae Carbonatis, gr. 30; Extracti Opii Liquidi, min. 30; Spiritus .Ethereus, fl. dra. 3; Decocti Cinchonae Flaves, ad fl. oz. 8. Mix. One sixth part every three or four hours. *In cases where it is feared that a deposition of fibrin has taken place in the heart or one of the large vessels.*

B. Spiritus Ammoniae Aromatice, Spiritus Chloroformi, ad fl. dra. 7; Liqueorii Morphine Hydrochloratae, fl. dra. 2; Extracti Cinchonae Flave Liquidi, fl. dra. 4;
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Tincture Cinchonei Flavæ, ad fl. oz. 3. Mix. Direct,—“One teaspoonful in a wineglassful of Port wine three times a day.” In certain cases of phthisis this mixture is very useful, especially in conjunction with cod liver oil and a liberal diet.

372. Ammonia, Bark, and Rhubarb.

R. Spiritus Ammonii Aromatici, fl. drs. 4; Extracti Cinchone Flavæ Liquidi, fl. drs. 1½; Tincturae Rhei, fl. drs. 4; Infusi Rhei, ad fl. oz. 8. Mix. One sixth part twice or thrice daily. In nervous depression, &c., with constipation.

373. Bark and Liquor Potassæ.

R. Liquoris Potassæ, fl. drs. 3; Tincturae Cinchonee Compositæ, fl. drs. 6; Decocti Cinchonei, ad fl. oz. 8. Mix. One sixth part twice or thrice daily. In debility attended with the lithe acid diathesis.

374. Bark and Serpentine.

R. Tincturae Cinchonee Compositæ, fl. oz. 1; Tinctura Aconiti, min. 30; Tincturae Serpentarie, et Tincturae Actæe Racemosæ, fl. drs. 3; Aquæ Menthe Piperitæ, ad fl. oz. 8. Mix. One sixth part three times a day. In some cases of chronic rheumatism, lumbago, and rheumatoid arthritis.

375. Bark and Hemlock.

R. Tinctura Cinchonee Compositæ, fl. drs. 6; Succi Conii, fl. drs. 4; Aquæ Pimentæ, ad fl. oz. 8. Mix. One sixth part three times a day. In chronic diseases attended with debility and pain.

376. Acid Mixtures and Bark.

R. Acidi Sulphuri Aromatici, fl. drs. 2; Syrupi Aurantii, fl. oz. 1; Tincturae Cinchonee Compositæ, fl. drs. 6; Infusi Cinchonei, ad fl. oz. 8. Mix. One sixth part twice or thrice daily, on an empty stomach. Especially useful in depressing disorders accompanied with occasional attacks of hemorrhage.

R. Acidi Phosphorici Dilutæ, fl. drs. 1½; Syrupi Aurantii, fl. drs. 6; Tincturae Cipsichne Compositæ, fl. oz. 1; Infusi Aurantii, ad fl. oz. 8. Mix. One sixth part three times a day. In debility, with nervous irritability.

R. Acidi Nitrici Dilutæ, vel Acidi Phosphorici Dilutæ, fl. drs. 1½; Tincturae Nucis Vomicae, fl. drm. 1; Extracti Cinchonee Flavæ Liquidi, fl. drs. 2; Aquæ Menthe Piperitæ, ad fl. oz. 8. Mix. One sixth part three times a day, two hours before each meal. In general weakness, with nervous exhaustion.

R. Acidi Aceticæ Glacialis, min. 20—35; Tinctura Belladonnae, Extracti Cinchonee Flavæ Liquidi, så fl. drs. 4; Tincturae Cardamomi Compositæ, fl. oz. 2. Mix and label,—“One small teaspoonful in a wineglassful of water twice or three times a day.” After operations on cancerous growths, to prevent recurrence.

Use Ext. Sarsæ Liq. as vehicles for tonics when there is any fear of old syphilitic taint.

377. Acid Mixtures with Calumba, &c.

R. Tinctura Calumbœ, fl. drs. 6; Acidi Sulphuri Aromatici, fl. drs 1½; Syrupi Aurantii, fl. oz. 1; Infusi Aurantii, ad fl. oz. 8. Mix. One sixth part three times a day, when the stomach is empty.

R. Acidi Hydrochlorici Dilutæ, fl. drs. 1½; Acidi Hydrocyanici Dilutæ, min. 20; Infusi Chirisæ, ad fl. oz. 8. Mix. One sixth part three times a day, immediately before the meals. As a stomachic, especially in the dyspepsia of gouty subjects.
B. Succin Limonis Recentis, fl. drs. 12; Syrupi Limonis, fl. oz. 1; Infusi Chiratae, ad fl. oz. 8. Mix. One sixth part three times a day. Where there is debility with a threatening of rheumatic fever. In cancer of the stomach, &c.

Glycerine mixed with tonics, especially preparations of steel, increases their efficacy and obviates their constipating effects.


B. Acidii Nitro-Hydrochlorici Diluti, fl. drs. 1½—3; Tincturae Chiratae, fl. drs. 3; Tincturae Aconiti, min. 30; Syrupi Aurantii, fl. oz. 1; Infusi Aurantii, ad fl. oz. 6. Mix. One sixth part three times a day, an hour before each meal. In ozzurino, dyspepsia, rheumatoid arthritis, &c.

B. Acidii Nitro-Hydrochlorici Diluti, fl. drs. 2; Acidii Hydrocyanici Diluti, min. 25; Succi Thalassi, fl. drs. 6; Tincturae Gentianae Compositae, fl. oz. 1; Infusi Sonae, ad fl. oz. 8. Mix. One sixth part twice or thrice daily. In dyspepsia, with sluggish action of the liver. The efficacy of this mixture may often be increased by giving with each dose a pill containing one or two grains of sulphate of zinc and four of extract of gentian.

B. Acidii Nitro-Hydrochlorici Diluti, fl. drs. 2; Liquoris Strychniae, min. 30—fl. drm. 1; Spiritas Chloroformi, fl. oz. 6; Tincturae Zingiberis, fl. oz. 3; Aque, ad fl. oz. 8. Mix. One eighth part, with a large tablespoonful of water, three times a day. In any form of functional paralyis after as the appreciable causes are remedied. Also in obstinate debility, hypochondriasis, atomic dyspepsia, diabetes fistulosa, alkaline urine, &c.

B. Acidii Nitro-Hydrochlorici Diluti, fl. drs. 1½; Tincturae Belladonnae, fl. drm. 1; Extracti Parens Liquidi, fl. oz. 1; Decocti Parens, ad fl. oz. 8. Mix. One sixth part, with one of the following pills, every six hours:—

B. Acidii Benzoici, gr. 30; Glycerini, sufficient to make a mass. Divide into six pills, and silver them. In incontinence of urine, when the reaction of the latter is alkaline. Also in some forms of hepatic congestion.

379. Quinine Mixtures and Pills.

B. Quinina Sulphatis, gr. 12; Acidii Nitrici Diluti, vel Acidii Phosphorici Diluti, vel Acidii Hydrochlorici Diluti, vel Acidii Sulphurici Aromatici, fl. drs. 1½; Tincturae Lupuli, fl. drs. 6; Aque, ad fl. oz. 8. Mix. One sixth part three times a day. Amongst other purposes, this mixture may be used to check the night sweats in phthisis.

B. Tincturae Quinina, fl. drs. 14; Tincturae Zingiberis Fortioris, fl. drs. 2; Glycerini, fl. oz. 1. Mix. One teaspoonful in a winelassful of water three times a day. In neuralgia, nervous irritability, weakness, &c.

B. Quinina Sulphatis, gr. 18; Extracti Lupuli, gr. 40. Make a mass, divide into twelve pills, and order one to be taken three times a day.

B. Quinina Sulphatis, gr. 4; Acidii Phosphorici Diluti, min. 20; Syrupii Aurantii, fl. drs. 4; Aque, ad fl. oz. 4. Mix. One small tablespoonful three times a day. In strumous ophthalmia and other cases of debility in children.

B. Quinina Sulphatis, gr. 64; Acidii Sulphurici Diluti, min. 10; Aque, fl. drs. 4. Mix. From fifteen minims to half a drachm (gr. 4—8) may be carefully injected into the subcutaneous connective tissue. Only a clear solution is to be used. Absorption of quinine merely suspended in fluid, is at least uncertain; the alkaloid must be in solution. The injection may have to be repeated three, four, or more times before a cure is effected. In intermittent fever, &c.

* The annexed for subcutaneous injection does not answer: the quinine will not dissolve. This is better—Quinina Sulphatis Neutralis, gr. 30; Acidii Sulphurici Aromatici, min. 5; Aque, fl. drs. 2. Mix.
380. Quinine and Steel.

B. Quiniae Sulphatis, Ferri Sulphatis, a a gr. 12; Liquoris Strychniae, min. 30; Acidi Sulphurici Aromatici, fl. drs. l 1; Infusi Quassiae, ad fl. oz. 8. Mix. One sixth part three times a day. The black stools which are passed while any preparation of steel is being taken, are due to the combination of the metal with part of the sulphur of the fog—forming sulphuret of iron.

R. Quiniae Sulphatis, gr. 9; Acidii Hydrochlorici Dilutii, fl. drm. 1; Tincturae Arnicæ, min. 30—fl. drm. 1; Tincturae Ferri Perchloridi, fl. drs. 1 1; Infusi Caryophylli, ad fl. oz. 8. Mix. One sixth part three times a day. In general debility, diptheria, erysipelas, &c.

R. Quiniae Sulphatis, gr. 1; Tincturae Ferri Perchloridi, fl. drs. 2; Tincturae Nuclei Voniceæ, fl. drm. 1; Tincturae Lupuli, fl. drs. 6; Magnesiae Sulphatis, oz. 1; Infusi Lupuli, ad fl. oz. 8. Mix. One sixth part daily, three hours after breakfast. In habitual constipation with debility.

R. Quiniae Sulphatis, Ferri Sulphatis Exsiccatæ, a a gr. 20; Extracti Hyoscyami, gr. 30. Make a mass, divide into twelve pills, and order one to be taken twice a day. In debility with irritability of the nervous system.

R. Quiniae Sulphatis, gr. 12; Ferrei Redacti, gr. 30; Extracti Aconiti, gr. 12; Glycerini, sufficient to form a mass. Divide into twelve pills, and order one to be taken an hour after dinner and supper. In neuralgia, rheumatoid arthritis, painful chronic affections with debility, &c.

R. Ferri et Quiniae Citratis, gr. 30; Tincturae Chiratae, fl. drs. 1 1; Aquæ, ad fl. oz. 8. Mix. One sixth part three times a day. An excellent tonic where there is exhaustion, with a weak and irritable stomach. If the strong bitter is objectionable, Tinctura of Lemon Peel may be substituted for the Chirata.

381. Quinine, Steel, and Arsenic.

B. Tincturae Quinicae, fl. oz. 1; Liquoris Arsenicalis, min. 18; Ferri et Ammoniæ Citratis, gr. 30; Aquæ Aurantium, ad fl. oz. 8. Mix. One sixth part two or three times a day, after meals. In diseases of the skin, &c., with impoverished blood.

R. Quiniae Sulphatis, gr. 9; Acidii Phosphorici Dilutii, Tincturae Ferri Perchloridi, a a fl. drs. 1 1; Liquoris Arsenicalis Hydrochlorici, min. 15—40; Syrupi Zingiberis, fl. drs. 6; Aquæ Cinnamoni, vel Infusi Quassiae, ad fl. oz. 8. Mix. One sixth part directly after breakfast, dinner, and supper. In many skin diseases, rheumatoid arthritis, carbuncular inflammation, &c. See F. 52, 399.

382. Quinine and Iodide of Iron.

B. Tincturae Quinicae, fl. oz. 1; Syrupi Ferri Iodidi, fl. drs. 3—6; Infusi Californiae, ad fl. oz. 8. Mix. One sixth part three times a day. In debility with a strumous taint, chronic rheumatism, tertiary syphilis, gout, &c.

383. Quinine and Belladonna.

B. Quiniae Sulphatis, gr. 24; Extracti Belladonae, gr. 4; Camphora, gr. 30; Confesiones Rose Gallice, sufficient to make a mass. Divide into twelve pills, silver them; and order one to be taken twice or thrice daily, in conjunction with one teaspoonful of good vinegar mixed with a wineglassful of sugared water. In some painful diseases (neuralgia, cancer, dysmenorrhea, &c.), where a sedative and tonic are needed. See F. 44.
384. Quinine and Ipecacuanha.

R. Quininc Sulphatis, gr. 12; Pulveris Ipecacuanhae, gr. 12—24; Extracti Gentiane, gr. 24. Mix. Divide into twelve pills, and order one to be taken every day at dinner. *An excellent remedy in cases of slow digestion.* See F. 44.

385. Quinine and Rhubarb.

R. Quininc Sulphatis, gr. 24; Pulveris Rhei, gr. 36; Extracti Lopuli, gr. 40. Mix. Divide into twenty-four pills, and order two to be taken night and morning.

386. Quinine and Ammonia.

R. Tinctura Quininc, fl. oz. 1; Glycerini, fl. dra. 6; Spiritus Ammoniae Aromatici, Spiritus Aethers, as fl. drs. 3; Extracti Opii Liquidi, min. 30; Infusi Aurantii, vel Infusi Cinchonae Flavae, ad fl. oz. 8. Mix. One sixth part every six hours. *In great exhaustion, with low muttering delirium and restlessness.*

387. Quinine and Nux Vomica.

R. Quininc Sulphatis, gr. 18; Extracti Nucis Vomicae, gr. 3—6; Extracti Gentiane, gr. 35. Mix, and divide into twelve pills. One to be taken night and morning. *In debility with constipation.* See F. 175, 409.

388. Substitutes for Quinine.

R. Beberinis Sulphatis, gr. 30; Acidum Sulphurici Aromatici, min. 40; Syrupi Aurantii, fl. oz. 1; Aqua Aurantii Floris, ad fl. oz. 8. Mix. One sixth part three times a day. *In neuralgic affections assuming a periodic character; as well as in intermittent and remittent fevers. Beberis does not produce cerebral disturbance and headache like quinine. This sulphate of an alkaloid is said to be an ingredient of Walchburg’s Fever drops.*

R. Salicini, gr. 60; Extracti Sarsae Liquidi, fl. dra. 6; Infusi Gentianae Compositi, ad fl. oz. 8. Mix. One sixth part three times a day. *During convalescence from acute disorders of the digestive organs. The antiperiodic properties of salicin render it useful in intermittent and some other fevers.*

R. Salicini, gr. 120; Glycerini, fl. oz. 1; Tinctura Aurantii, ad fl. oz. 3. Mix. One teaspoonful in a wineglassful of water night and morning. *Where the stomach is easily nauseated and cannot digest quinine, this formula will be useful.*

389. Cod Liver Oil.

The oil most commonly used is of a pale straw colour, the dose varying from a teaspoonful to a large tablespoonful twice or thrice daily. It should be taken immediately after meals; floating it on milk, coffee, beef tea, orange juice, orange wine, brandy and water, cherry brandy, &c. Chewing a piece of lemon peel or cinnamon, or a few cloves previously, will disguise the flavour. Sometimes it is preferred made into an emulsion; which may be done by beating it up with an equal proportion of lime water, or of milk, or with the yolk of an egg and some compound tincture of cardamoms. When the oil proves indigestible, giving rise to nausea or unpleasant eruptions, the stomach can often be made to tolerate it by administering some preparation of pepeine (P. 420) with each dose. Dr. Du Jovem’s oil is pure, and is prescribed by many practitioners.

Cod liver oil may be impregnated with various drugs,—such as any of the essential oils, morphia, arsenic, iodine, mercury, quinine, zinc, iron, &c. Too large a quantity of the solution must not be made at a time, as the oil soon becomes rancid.
Combined with ozone [an allotropic modification of oxygen—σαλος=another + τρώματος=maner of existence,] it has been found to lessen considerably the frequency of the pulse in phthisis. The dose of ozonized oil, according to Dr. E. Symes Thompson, is from two to four drachmas, two or three times a day. See F. 32, 390, and 418.

390. Iodide of Iron and Cod Liver Oil.

B. Syrupi Ferri Iodidi, fl. drs. 4; Macilaginis Tryagastheni, fl. oz. 1; Olei Morrhui, fl. oz. 4. Mix. One tablespoonful twice or thrice daily. In some forms of scrofula, phthisis, mild constitutional syphilis, &c.

B. Potassii Iodidi, gr. 3—1; Glycerini, fl. drs. 2; Vini Ferri, fl. drs. 4; Olei Morrhui, fl. drs. 6. Mix, and make a draught to be taken twice a day. In chronic rheumatism, tertiary syphilis, scrofulous skin diseases, &c.

391. Steel and Cocoa-nut Oil.

B. Olei Cocos Nucis, fl. drs. 2; Spiritus Ammonis Aromatici, min. 30; Ferri et Ammonis Citratis, gr. 5; Aquae Menthas Piperiti, ad fl. oz. 1. Mix, and make a draught to be taken twice or thrice daily. Deserving of trial when cod liver oil causes nausea.

392. Steel and Glycerine.

B. Tinctoriae Ferri Perchloridi, fl. drs. 14—2; Zinci Phosphatis, gr. 6; Spiritus Chloroformi, fl. drs. 3; Glycerini, fl. oz. 1; Aquae, ad fl. oz. 8. Mix. One sixth part three times a day. In some cases it is better to omit the glycerine from this mixture; administering cod liver oil instead, after one or two of the chief meals of the day.

B. Tinctoriae Ferri Perchloridi, fl. drs. 2—4; Glycerini, fl. drs. 4; Tinctoriae Cardamomi Compositae, fl. oz. 1; Aquae, ad fl. oz. 8. Mix. One eighth part every three or four hours. In diphtheria, erysipelas with albuminuria, &c.

B. Spiritus Ammonis Aromatici, fl. drs. 4; Ferri et Ammonis Citratis, gr. 40; Infusi Quassiae, fl. oz. 6—4; Glycerini, fl. oz. 1. Mix. One sixth part three times a day. In general debility, with a torpid state of the colon.

393. Steel and Digitalis.

B. Tinctoriae Ferri Perchloridi, min. 30; Infusi Digitalis, fl. oz. 2; Aquae Camphorae, ad fl. oz. 8. Mix and label,—“One eighth part, with one tablespoonful of water, three times a day.” In some forms of cardiac and renal dropsy, &c.

394. Steel and Pepsine.

B. Ferri Redacti, gr. 12—60; Pepsinis Porci, gr. 36; Zinci Phosphatis, gr. 18; Glycerini, sufficient to make a mass. Divide into twenty-four pills, silver them, and order two to be taken every day at dinner. In anæmies, &c., with weakness of the digestive organs.

B. Ferri et Ammonis Citratis, gr. 20; Spiritus Vini Gallici, fl. oz. 1. Vini Pepsinis, fl. drs. 4; Aquæ, ad fl. oz. 6. Mix. One half to be taken every day at dinner. See F. 420.

395. Steel and Hemlock.

B. Phyllus Ferri Carbonatis, gr. 60; Extractii Conii, gr. 36—60. Mix, and divide into twenty-four pills. Two to be taken twice or thrice daily. In phthisis, and in many diseases attended with cough and debility.
396. Steel Electuaries.

R. Ferri Peroxidi Hydrati, Mellis Depurati, ää oz. 2. Mix. One teaspoonful twice a day. *In chorea*, &c.

R. Ferri Carbonatis Saccharati, gr. 120–240; Oxymellis, fl. oz. 3. Mix. One teaspoonful twice or thrice daily after meals. Where there is no objection to pills it will be better to prescribe from 5–10 grs. of the officinal *Pilula Ferri Carbonatis* twice a day.

397. Steel and Hydrochloric Acid.

R. Tinctura Ferri Perchloridi, fl. drs. 1½; Acid. Hydrochlorici Diluti, fl. drs. 2; Spiritus. Chlороformi, fl. drs. 3; Infusi Quassia, ad fl. oz. 8. Mix. One sixth part three times a day. *See F. 101.*

398. Steel and Gentian.

R. Ferri Sulphatis Granulati, Extracti Gentiane, ää gr. 30. Mix, divide into twelve pills, and order one to be taken three times a day. *In chlorosis*, &c.

399. Steel and Arsenic.

R. Vini Ferri, fl. oz 4; Liquoris Arsenicalis, min. 29; Syrups. Zingiberis, fl. oz. 2. Mix. One sixth part, with three tablespoonfuls of water, three times a day, immediately after meals. *For cases of purpura.* *In reduced doses as a tonic and alterative in some of the skin diseases of children.* *See F. 52, 301, 402.*

R. Syrups. Ferri Phosphatis, fl. oz. 2; Liquoris Soda Arseniatis, min. 30. Mix. One teaspoonful in a wineglassful of water directly after dinner and supper. *In some forms of spleen disease,* &c.

400. Steel and Cantharides.

R. Tinctura Cantharidis, fl. drs. 1½; Glycerini, fl. oz. 1; Mixture. Ferri Composita, ad fl. oz. 8. Mix. One sixth part three times a day. *In virility of the generative organs, some forms of incontinence of urine,* &c.

R. Tinctura Cantharidis, Tinctura Ferri Perchloridi, ää fl. drm. 1; Tincturæ Capsici, fl. drs. 1½; Syrups. Hemidesmum, fl. oz. 1; Aque, ad fl. oz. 8. — Mix. One sixth part three times a day.

401. Steel and Ammonia.

R. Ferri Tartarati, gr. 60; Spiritus Ammoniae Aromatici, fl. drs. 3; Infusi Quassia, ad fl. oz. 8. Mix. One sixth part three times a day. *In chlorosis, leucorrhoea from relaxation of vaginal mucous membranes,* &c.

R. Ferri et Ammoniae Citratis, gr. 40; Ammoniae Carbonatis, gr. 30; Tinctura Zingiberis, fl. drs. 3; Aque, ad fl. oz. 8. Mix. One sixth part three times a day.

402. Steel and Chlorate of Potash.

R. Tinctura Ferri Perchloridi, fl. drs. 1½; Potassse Chloratis, gr. 120; Liquoris Arsenicalis, min. 15; Aque, ad fl. oz. 8. Mix. One sixth part three or four times a day, in a wineglassful of water. *In certain skin diseases, onychia,* &c. *Also dependent on a syphilitic taint,* in erysipelas about the face, and in tussilaginitis, &c., omitting the solution of arsenic from the mixture.
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403. Steel and Citrate of Potash.

R. Ferri et Ammoniae Citratis, gr. 60; Spiritus Ammoniaci Aromatici, fl. drs. 4; Potaessae Bicarbonatis, gr. 120; Infusi Calumba, ad fl. oz. 8. Mix. One sixth part to be taken twice a day with one tablespoonful of lemon juice. *As a tonic during convalescence from many acute diseases, especially where there is a tendency to anaemia and dyspepsia.*

404. Steel and Aloes.

R. Ferri Carbonatis Saccararate, gr. 40; Infusi Anthemidis, fl. oz. 8. Mix. One sixth part twice a day. The following draught is also to be taken every other morning before breakfast:—Soda Phosphata, gr. 120; Extracti Rhei, gr. 10; Decocti Aloes Compositi, fl. drs. 4; Aqua Carni, fl. oz. 1. Mix. *Useful for atonic gouty subjects.*

R. Ferri Redacti, gr. 30; Pilulæ Aloes et Myrrhae, gr. 24—40; Extracti Nucis Yonicae, gr. 4. Make a mass, divide into twelve pills, and order one to be taken three times a day. *In anaemia with constipation.*

R. Mixture Ferri Composite, Decocti Aloes Compositi, &c. fl. oz. 4; Zincii Sulphatis, gr. 12. Mix. One sixth part twice a day. *In anaemia, hypochondriasis, general debility with constipation,* &c.

405. Phosphate of Iron.

R. Ferri Phosphatis, gr. 40; Acidi Phosphorici Diluti, fl. drs. 1½; Syrupi Auranti Floris, fl. oz. 1; Muscimotis Traeacanthis, ad fl. oz. 8. Mix. One sixth part three times a day. *In scrofula, cancer, low nervous vigour,* &c.

R. Ferri Phosphatis, gr. 20; Pulveris Myrrhae, gr. 15; Sacchari Albi, gr. 30. Mix, and divide into six powders. One to be taken night and morning. *In rickets, and in all the stramous diseases of children.*

A syrup of the Phosphates of Iron, Lime, Soda, and Potassa has been prepared by Mr. Parrish, of Philadelphia. It may be obtained from most London chemists; being known as “Chemical Food.” The dose for a child ten years of age, is one teaspoonful in water after the two principal meals of the day. This measure contains one grain of phosphate of iron; two and a half grains of phosphate of lime; and smaller portions of the alkaline phosphates. Chemical Food is a preparation of great value in all forms of stramous diseases, and general debility.

406. Steel and Manganese.

R. Ferri Phosphatis, gr. 120; Manganesi Phosphatis, gr. 50; Tinctura Calumba, fl. oz. 1; Syrupi Zingiberis, fl. oz. 2. Mix. One teaspoonful in a wine-glassful of water three times a day. *In chlorosis, scrofula,* &c.

407. Acetate of Strychnia.

R. Strychninis Acetatis, gr. 1; Acidii Aceti, min. 20; Alcoholis, fl. drs. 2; Aquæ Destillate, fl. drs. 6. Mix. Ten drops (= to gr. 1/5) to be taken in water three times a day. *Recommended by Dr. MARSHALL MALL as a tonic in cases of nervous exhaustion.*

R. Strychninis, gr. 1; Pulveris Zingiberis, gr. 40; Extracti Gentianæ, gr. 60. Mix very thoroughly, divide into twenty pills, and order one to be taken night and morning. *In partial paralysis, amaurosis,* &c., when the acute symptoms have subsided.
408. Strychnia and Steel.

R. Ferri et Ammonia Citratis, gr. 40; Liquoris Strychniae, min. 30 (= to gr. 1); Infusi Quassiae, ad fl. oz. 8. Mix. One eighth part twice a day. In chronic nervous affections with debility.

R. Ferri Redacti, gr. 40; Zinci Valerianatis, gr. 20; Strychnia, gr. 1; Glycerrhini, sufficient to make a mass. Divide very carefully into twenty pills, silver them, and direct one to be taken three times a day, after food. In hypochondriasis, great nervous depression, &c.

409. Zinc and Nux Vomica.

R. Zinci Sulphatis, gr. 24; Extracti Nucis Vomicae, gr. 6; Extracti Rhei, gr. 30. Make a mass, divide into twelve pills, and order one to be taken twice a day. In weakness of the muscular system, atony of intestinal walls, &c. See F., 177, 387.

410. Valerianate of Zinc.

R. Zinci Valerianatis, gr. 12—24; Extracti Belladonae, gr. 3—6; Extracti Gentianae, gr. 24. Make a mass, divide into twelve pills, and silver them. One to be taken three times a day. In some nervous disorders, in cases of habitual constipation, and in spasmodic contraction of the sphincter ani.

R. Zinci Valerianatis, Zinci Phosphatis, &c gr. 10; Extracti Rhei, gr. 24. Make a mass, divide into twelve pills, and silver them. Order one to be taken three times a day. For epilepsy, neuralgia, hysteria, &c. The valerianate of quinine, of soda, of ammonia, and of steel, may be employed in the same manner. In some cases of neuralgia as many as twelve or twenty grains of valerianate of ammonia in infusion of calumba have been given every four hours.

411. Valerianate of Zinc and Quinine.

R. Zinci Valerianatis, gr. 12; Quiniae Sulphatis, gr. 6; Pilulae Rhei Compositae, Extracti Antherenidis, &c gr. 20. Make a mass, divide into twelve pills, and silver them. One to be taken three times a day. In hysteria, neuralgia, &c.

412. Valerianate of Steel and Sarsaparilla.

R. Ferri Valerianatis, gr. 24; Olei Sabinae, min. 24; Pilulae Assafutidae Compositae, gr. 30. Make a mass, divide into twelve pills, and silver them. One to be taken three times a day. In anemia, hysteria, and neuralgia, with amenorrhœa.

413. Sulphate of Zinc.

R. Zinci Sulphatis, gr. 24; Extracti Aconiti, gr. 12; Extracti Quassiae, gr. 24. Make a mass, divide into twelve pills, and order one to be taken three times a day. In epilepsy with neuralgic pains, thymus, pleurodynia, &c. Its efficacy is much increased by giving cod liver oil at the same time.

R. Zinci Sulphatis, gr. 12—24; Extracti Confi, gr. 36. Make a mass, divide into twelve pills, and order one to be taken three times a day. In the chronic bronchitis of old people as a tonic and sedative, &c.

414. Phosphate of Zinc, &c.

R. Zinci Phosphatis, gr. 20—40; Acidii Phosphorici Diluti, fl. drs. 14; Tincturæ Cinchonae Flavæ, fl. drs. 6, vel Tincturae Ferri Perchloridi, fl. drs. 14; Aqua
Mentha Piperita, ad fl. oz. 8. Mix. One sixth part three times a day. In some affections of the nervous system with debility.

R. Zinci Phosphatis, gr. 20; Extracti Nucis Vomicae, gr. 5; Extracti Gentianae, gr 20. Mix. Divide into twenty pills, silver them, and order one to be taken twice a day.

415. Oxide of Zinc.

R. Zinci Oxidi, gr. 24—30; Extracti Anthemicis, gr. 30. Make a mass, divide into twelve pills, and order one to be taken twice a day. In chronic alcoholism (?), chronic hysteria, &c. Dr. Golding Bird entertained an opinion that zinc has a specific influence on the nervous system, just as iron has on the blood. The dose may be gradually increased until twenty or even thirty grains of the zinc are taken in the day. It can sometimes be advantageously combined with quinin.

416. Zinc, Bark, and Glycerine.

R. Zinci Sulphatis, gr. 12—20; Tinctura Cinchomae Composita, fl. oz. 1; Glycerini, ll. drs. 12; Aquae Menthei Piperitae, ad fl. oz. 8. Mix. One sixth part three times a day. During convalescence from acute disease, especially where there is exhaustion with great nervousness and constipation.

417. Phosphorus Pills.

R. Micra Panis, gr. 60; Aqua Destillata, sufficient to make a mass. Then add—Phosphor, gr. 1; Mix thoroughly, divide into twenty pills, and order one to be taken thrice daily. In extreme dizziness and mental depression. In various affections of the nervous system. After cholera, diphtheria, &c.

Phosphorus pills and Phosphorus capsules, in which the Phosphorus is defended from the rapid oxidation to which it is liable, are prepared by several houses, and may be obtained through most chemists. Of these the capsules or pearls, which contain 1/15 of a grain of Phosphorus dissolved in oil, are by far the best.

418. Phosphorus and Oil and Tincture of Phosphorus.

B. Phosphorii, gr. 1; Olei Morrhuei, fl. oz. 6. Mix. One or two teaspoonfuls three times a day, immediately after food. In tuberculosi, rickets, scrofula, &c.

B. Phosphorii, gr. 1; Olei Amygdali, fl. oz. 3. Mix. One teaspoonful in a wineglassful of barley water three times a day.

B. Phosphorii, gr. 1; Alcohol, fl. dr. 5; Glycerini, fl. oz. 11/; Spiritus Vini Rectificati, fl. dr. 2; Spiritus Menthei Piperitis, fl. dr. 1/2.

Dissolve the Phosphorus in the Alcohol by the aid of heat; warm together the Glycerine and Spirit of Wine. Mix while hot, and add the Spirit of Peppermint on cooling; fl. dr. 1 contains gr. 1/15 of Phosphorus. Employed by Mr. J. Ashmead-Thomson in the treatment of neuralgia.

419. Hypophosphite of Soda.

B. Sodae Hypophosphitatis vel Calcis Hypophosphitatis, gr. 30—90; Infusi Chiratae, fl. oz. 3. Mix. One sixth part three times a day. In phthisis, tubae mesenteria, &c. In progressive locomotor ataxy the efficacy of this mixture may be increased by giving a pill containing Nitrate of Silver (£. 50) with each dose.
TONICS.

420. Preparations of Pepsine and Pancreatin.

The physician is sometimes hindered in the administration of tonics and cod liver oil and animal food by the inability of the stomach to digest them. And this frequently happens where these restoratives are most needed,—in cases of degeneration of tissue, in lingering illness, and during convalescence from acute disease.

The food is subjected in the stomach to the action of the gastric juice; a secretion consisting of water, probably of lactic and hydrochloric acids, and of an amonized substance having the nature of a ferment—pepsine. When from any cause the secretion of the gastric glands is deficient or arrested, recourse may be had to the use of artificial pepsine with great advantage. The substance is usually prepared from the small rennet bags (the fourth stomach of the ruminants) by washing them, and scraping off the mucous membrane. The latter is then reduced to a pulp, macerated in distilled water for twelve or twenty-four hours, and filtered. A sufficiency of acetate of lead is added to the liquor, the precipitate is collected, and a current of sulphured hydrogen passed through it. Then it is again filtered, evaporated at a low temperature, and the dry residue (pepsine) powdered. The chief symptoms which call for the use of this agent, are—imperfect or slow digestion, with flatulence, acid eruptions, nausea, low spirits, and lassitude; diarrhoea, with portions of undigested food in the evacuations; putridity, cancer, and other diseases attended with great debility, and affections of the stomach itself,—as gastric ulcer, malignant disease of the pylorus, &c. It is also beneficial in anaemia and chlorosis, in habitual constipation, want of appetite, offensive breath, dilated stomach, morbidly furred stools, and sometimes in the sickness of pregnancy.

Pepsine should be given alone, or it may be mixed with certain medicines without its properties becoming deteriorated. Thus, when severe pain follows the ingestion of food, the sixth of a grain of morphia can be added to each dose; when there is pyrosis, fifteen grains of the white bismuth; when the peristaltic movements are sluggish, the twentieth or twenty-fifth part of a grain of strychnia; and when there is anaemia, some preparation of steel—particularly the reduced iron or the citrate of iron and quinia. It is a common occurrence for patients to be enabled to assimilate ferruginous tonics and cod liver oil by the aid of pepsine, who cannot do so without.

There are several preparations of this agent which may be used. In Bouchuitt's Poudre Nutrimente, as purchased from Mr. Squire, the pepsine is mixed with starch in such proportions, that one part of the powder so formed will have the power of digesting four parts of fibrin at a temperature of 93° Fahr. Thus, fifteen grains of the powder will probably cause the meat of a mutton chop to be digested in the stomach. This, then, is the ordinary dose; and it should be taken at the commencement of the meal, either between two pieces of bread, or in a teaspoonful of lukewarm soup.

Morgan's Pepsine Wine is obtained from the gastric juice of the calf's stomach. It is an agreeable, slightly acidulous wine; the dose being one teaspoonful in water. The Pepsine Lesensges prepared by the same chemist are convenient and agreeable.

Bullock and Reynolds' Pepsina Forsi is procured, as its name implies, from the stomach of the pig. In a short series of experiments its action was found by the Author superior to that of most other kinds. The dose is from two to five grains, made into a pill with glycerine.

And lastly there is the Rennet or Pepsine Wine of Dr. Ellis, of Dublin, the preparation of which may be thus described. Take the stomach of a calf as fresh as it can be obtained from the butcher: cut off about three or four inches of the upper or
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cardiac extremity, which, containing few glandular follicles, may be thrown away.
Slit up the organ longitudinally; and wipe it gently with a dry napkin, taking care
to remove as little of the clean mucus as possible. Then cut it into small pieces
(the smaller the better), and put all into a common wine bottle. Fill up the bottle
with good sound sherry, and let it remain corked for a fortnight; at the end of this
time it is fit for use. The dose is a teaspoonful in a wineglassful of water imme-
diately after meals. Dr. Ellis also suggests this test for pepticum:—Put a small
cup containing milk in a vessel of hot water until the milk becomes blood-warm.
Then add a teaspoonful of remnet wine; and if it be genuine, the milk in two or
three minutes will become as solid as blancmange. See F. 389, 394.
The pancreatic juice has as its chief purpose the emulsification of the fatty
constituents of food, and when there is difficulty in the digestion of fats, or when,
from disease of the pancreas or obstruction of its duct, the pancreatic juice does not
reach the duodenum, so that unchanged fat appears in the stools, pancreatitis has
been given, or fatty matters already subjected to the action of this substance. The
following emulsion of cod liver oil and pancreatin is recommended by Dr. RICH.
MATHISON:

Pancreatin Saccharati, oz. 1; Aquæ, oz. 4; Sacchari Albi, oz. 7; Ol. Morrhæus,
Ojas; Ol. Gaultheria, min. 20; Ol. Amygd. Amar. min. 5.

The pancreatin is rubbed with the sugar and water; the syrup then mixed
with the oils. A little lime water may be substituted for part of the water.
A pancreatic emulsion of solid fats is prepared by Messrs. SAVORY and MOORE.

XVIII. UTERINE THERAPEUTICS.

421. Ferruginous Emmenagogues.

B. Potassii Iodidi, gr. 18—30; Ferri et Ammoniae Citratis, gr. 40; Tinctura
Nucis Vomicae, fl. drm. 1; Infusii Quassiae, ad fl. oz. 8. Mix. One sixth part three
times a day. In amenorrhæa with a torpid circulation.

B. Syrupi Ferri Iodidi, Glycerini, ss fl. oz. 1; Olei Limonis, min. 10. Mix.
One teaspoonful in a wineglassful of water three times a day. See F. 32.

. B. Pilulæ Ferri Carbonatis, gr. 30; Pilulæ Cambogiae Composite, gr. 15;
Olei Sabane, min. 12. Make a mass, divide into twelve pills, and order two
to be taken twice a day. In amenorrhæa with anaemia and habitual constipation.

B. Ferri Valerianatis, gr. 18; Olei Sabane, min. 24; Extracti Aloes Barba-
densis, gr. 6; Pilulæ Asafoetidae Composite, gr. 36. Mix thoroughly, and divide
into twelve pills. One to be taken three times a day. In amenorrhæa with hysteria.
See F. 412.

B. Tinctura Ferri Perchloridi, fl. dra. 1/4; Potassæ Chloratis, gr. 60; Tinctura
Actæe Racemosæ, fl. dra. 4; Infusii Serpentariae, ad fl. oz. 8. Mix. One sixth
part three times a day. In debility, with imperfect menstruation, pains in the back,
and an irritable condition of the buccal or gastric mucous membrane. See F. 320.

422. Stimulant Emmenagogues.

B. Extracti Ergotæ Liquidi, fl. dra. 3; Tinctura Serpentariae, fl. dra. 6; Tinc-
tura Nucis Vomicae, fl. drm. 1; Decocti Aloes Compositi, ad fl. oz. 8. Mix. One
sixth part early every morning. In amenorrhæa dependent on simple atony of the
uterine organs.

B. Potassii Bromidi, gr. 60; Tinctura Cantharidis, fl. dra. 1/4; Tinctura
Cinnamomi, fl. dra. 6; Aquæ, ad fl. oz. 8. Mix. One sixth part three times
a day. In amenorrhæa with epileptic seizures.
K. Olei Rutae, min. 15; Extracti Ergotes. Liquef. fl. drs. 2; Mucilaginis Tragacanthi, ad fl. oz. 8. Mix. One sixth part three times a day.

B. Boracis, gr. 60; Tinctura Ergotes, fl. drs. 4; Aqua Cinnamoni, ad fl. oz. 3. Mix. One sixth part three times a day.

B. Tinctura Hellebori (Phar. Lond. 1861) fl. drs. 3; Syrupi Zingiberis, fl. drs. 6; Infusio Senne, ad fl. oz. 8. Mix. One sixth part once or twice a day. In amenorrhoea with torpid action of the bowels.

B. Liquoris Strychniæ, min. 30; Tinctura Pruni Perchloridi, fl. drs. 1½; Tinctura Aethiops Racemosæ, fl. drs. 4; Infusio Quassiae, ad fl. oz. 3. Mix. One sixth part three times a day.

B. Podophylli Resinæ, gr. 6; Extracti Hyoscyami, gr. 24; Extracti Nacis Vomicae, gr. 4; Pulinæ Aloes et Myrrhae, gr. 30. Mix. and divide into twelve pills. One to be taken at bedtime for three or four nights in succession. Where the menstrual flow is scanty, and the liver sluggish.

423. Medicated Vaginal Pessaries.

B. Plumbi Iodidi, gr. 80; Extracti Belladonnae, gr. 24—40; Extracti Coniæ, gr. 100; Olei Theobromae, oz. 1—½; Olei Olivarum, fl. drs. 2. Mix; melt into a mass with gentle heat, and pour it into a tube or roll of paper, about eight inches long and of the circumference of the little finger. Divide into eight pessaries; and order one to be introduced into the vagina every night, or every other night. In chronic inflammation and induration of the labia uteri, in ovaritis, in pelvic cellulitis, and in chronic cystitis. For an account of the advantages of cacao butter (oil of theobroma) over other materials in making these pessaries the reader is referred to a paper by the Author in the Obstetrical Transactions, vol. iv. p. 205, London, 1863.

B. Unguenti Hydargyri, gr. 60—150; Olei Theobromae, oz. 1—½; Olei Olivarum, fl. drs. 2. Mix. Divide into eight pessaries. Where there is tenderness of the cervix uteri, or of the ovaries, thirty grains of Extract of Belladonna or one hundred grains of Extract of Conium should be added to the mass.

B. Iodoformi, gr. 80; Olei Theobromae, cc. 1; Glycerini, fl. drs. 2. Mix. Divide into eight pessaries. As a local anaesthetic in cancerous and other painful uterine diseases. The smell of iodoform renders these pessaries very unpleasant to many patients.

B. Extracti Aloes Socotrine, gr. 60; Olei Sabinæ, fl. drn. 1; Olei Theobromæ, oz. 1; Olei Olivarum, fl. drs. 2. Mix. Divide into eight pessaries, and order one to be introduced into the vagina every night. As an emmenagogue and purgative.

B. Plumbi Acetatis, gr. 20; Extracti Opii, gr. 24; Olei Theobromae, oz. 1; Glycerini, fl. drs. 2. Mix. Divide into eight pessaries, and order one to be used every night. In chronic leucorrhœa, acute and follicular vaginitis, &c.

B. Zinci Oxidi, vel Bismuthi Carbonatis, gr. 80; Extracti Belladonnae, gr. 40; Olei Theobromae, oz. 1; Olei Olivarum, fl. drs. 2. Mix. Divide into eight pessaries. In the same cases as the preceding. Also in cancer of the cervix uteri, and in severe irritability of the bladder.

B. Potassae Permanganatis, gr. 24; Extracti Aconiti, gr. 12; Extracti Opii, gr. 16; Olei Theobromae, oz. 1—½. Mix. Divide into eight pessaries, and order one to be used every night. In uterine diseases attended with pain and offensive discharges. In cancer advanced to the stage of ulceration the quantity of the permanganate should be reduced about one third.

B. Potassii Iodidi, gr. 40; Extracti Coniæ, gr. 120; Olei Theobromae, oz. 1; Olei Olivarum, fl. drs. 2. Mix. Divide into eight pessaries. One to be used every night. In induration of the labia uteri in strumous subjects.
R. Acidi Tannici, gr. 120; Pulveris Catechin, gr. 60; Olei Theobromae, oz. 2; Glycerini Acidi Carbolici, fl. drs. 3. Mix. Divide into eight pessaries, and order one to be used twice a week. In prolapsus uteri with relaxation of the vaginal tissues, as well as in uterine hemorrage, in chronic uteritis, and in menorrhagia.

424. Medicated Uterine Pessaries.

R. Acidi Tannici, Olei Theobromae, aa oz. 3. Mix. Divide into eight pessaries, each having the diameter of an ordinary stick of nitrate of silver. In uterine hemorrage with a putridous condition of the os uteri, one of these pessaries may be introduced up the canal of the uterus and left there. It soon dissolves and coats the lining membrane with the tannin.

R. Aluminis, gr. 80; Zinci Sulphatis, gr. 40; Olei Theobromae, oz. 3. Mix. Divide into eight pessaries, as in the preceding formula.

R. Unguenti Hydrargyri, Olei Theobromae, aa gr. 20; Extracti Belladonnae, gr. 20. Mix, and divide into eight pessaries as in the first of these formulas.

R. Extracti Aconiti, gr. 12; Extracti Opii, gr. 16; Extracti Hyoscyamiae gr. 100; Olei Theobromae, oz. 1; Olei Olives, fl. drs. 3. Mix. Divide into eight pessaries, and order one to be used every night.

425. Vaginal Injections.

R. Extracti Hæmatoxyli, oz. 1; Aluminis, gr. 120; Aque, fl. oz. 2. Mix, and label,—“To be added to one pint of cold water to form an injection.”—Like other vaginal injections this one is to be used with a vulcanized india rubber syphon syringe, a pint or more of plain water being first thrown up.—In diseases attended with an offensive discharge. The patient should be cautioned that the fluid will dye linen, etc., soiled with it.

R. Zinci Sulphatis, Aluminis Exsiccatae, aa oz. 1; Acidi Tannici, oz. 2. Mix. Label,—“One teaspoonful to be mixed with a pint of tepid or cold water to form an Injection.”—In leucorrhæa, gonorrhæa, etc.

R. Zinci Chloridi, gr. 160; Aque, fl. oz. 3. Mix. Label,—“One teaspoonful to be mixed with a pint of cold water to form an Injection. To be used night and morning.”—In gonorrhæa.

R. Liquoris Plumbei Subacetatis, fl. oz. 6; Extracti Papaveris, oz. 2. Mix, and label,—“One large tablespoonful to be mixed with a pint of warm or tepid water to form an Injection.”—In cases of leucorrhœa, with an irritable condition of the os uteri or vagina; as well as in rotten ulcer of the uterus.

H. Extracti Papaveris, oz. 1; Tinctura Belladonnae, fl. drs. 4. Mix, and label,—“Two teaspoonfuls to be added to one pint of linseed tea, to form an Injection.”—As a soothing remedy in cancer of the cervix uteri, when there is but little tendency to hemorrage.—It may be employed twice or thrice in the twenty four hours.

426. Sponge Tents, &c.

For the purpose of dilating the mouth and cavity of the uterus, the female urethra, a stricture rectum, or a contracted orifice of the male prepuce, nothing can be better than the sponge tents introduced into obstetric practice by Sir James Simpson. These instruments are of a narrow conical form, and of various sizes. They are made by dipping a piece of sponge into water, and then compressing it around a central wire with whippcord. After drying, the cord is removed; the surface of the tent being then coated with a mixture of lard and wax, while three or four inches of tape are fastened to its base. The tents, which the Author has generally used have been made by Duncan and Flockhart of Edinburgh, and they are perfect. A metallic director, somewhat resembling the uterine sound, with a sharp point, is needed for their introduction up the uterine canal; while their removal is accomplished by pulling the tape. A fresh tent must be introduced every twenty-four or forty-eight hours, until the tissues are sufficiently dilated to allow the finger to explore the cavity of the uterus.
Dr. Sloan of Ayr has suggested the use of the dried stem of the sea-tangle (Laminaria digitata) as a substitute for sponge. The stem of this common marine plant is cylindrical, soft, flexible, firm, and capable of being greatly reduced in size by drying. On subsequently being supplied with sufficient moisture it dilates at least three or four times its size. The tangle tents produce equable dilatation, are in all respects very efficient, are cleanly, and ought to be cheap. They are more easily introduced into the uterus than the sponge tents, but they are also more liable to slip out again when the pressure of the finger is removed. In employing these tents it seems best to dip them in hot water just prior to introducing them; avoiding the use of oil, as it interferes with their absorbing power.

Tents may also be made of gentian and of elm bark; but the Author has had no experience with these kinds, having been perfectly satisfied with the sponge and sea-tangle.

427. Galactophora and Galactophylla.

a. Galactophora [γαλα = milk + φορα = to bear], or Galactagogues [γαλα + φορα = to drive out], are remedies which increase the secretion of milk. Defective lactation is not common amongst healthy mothers, but with the weak and delicate it is very frequent. When it arises amongst the first class it is generally due to over-feeding; when amongst the second, anemia is its cause. In either class, a torpid condition of the mammary gland may be its source.

Defective lactation from phthisis will be best treated by purgatives, the most efficient being castor-oil. All kinds of beer, wine, and spirits are to be prohibited. Animal food is to be allowed; with vegetables, bread, tea, &c. A mixture of milk and soda water, in equal parts, forms an excellent drink in these cases. The patient is not to be weakened; but she should be cautioned against the vulgar error, that a large quantity of food is necessary simply because she is nursing.

Defective lactation from anemia is not uncommon. When the weakness is not such as to forbid suckling, the health ought to be improved by animal food; by a fair allowance of ale or porter or wine; and by taking milk, or cocoa made with milk, instead of tea and coffee. A raw egg beaten up in a tumblerful of milk, once or twice a day, will do good. Then ammonia and bark (F. 371) may be given; or some non-astringent ferruginous tonic (F. 403, 405); or cod liver oil.

Defective lactation from torpor of the mamma is the most frequent variety. In these cases benefit will be derived from irritating the gland and nipple, as by the careful use of the breast pump; by drawing out the nipple several times with the fingers, before the infant is applied; by passing an electric current through the gland, for fifteen or twenty minutes daily, for several days in succession; or by the application of a hot carrot poultice, during some hours daily. The breasts are to be kept warm. Moderate sexual intercourse is also useful.—Beef and mutton, game and poultry, white fish, oysters, stewed eels, potatoes, parsnips, lettuce, carrots, turnips, &c., will increase the secretion. There is no objection to stout, or to any other kind of malt liquor, provided the stomach can digest it; while from one to two pints of cow’s milk should be allowed daily.—With regard to drugs, perhaps the most efficacious is a decoction of the leaves and stalks of the Ricinus communis, or Castor-oil plant. Dr. Routh recommends the administration of a strong decoction of this plant or of an extract; the dose of the former being from one to two drachms daily in water, or of the latter five grains. The castor-oil leaves may also be applied over the breasts, or an infusion of them can be used with lint and oiled silk. Amongst other remedies reputed to possess galactagogue properties must be mentioned,—Aqua Anethi or Dill water, and Oleum Anethi; Aqua Anisi or Aniseed water, and Oleum Anisi; and particularly Aqua Foeniculi or Fennel water, and Oleum Foeniculi. The dose of either of these waters is from two to four ounces, and of the oil about five minims on a lump of sugar, twice or thrice daily.—The value of such agents as the Malva Sylvestris or Marsh mallow, of the Saponaria vaccaria or cow-bush, of the juice or decoction of Brom tops, and of the infusion of Althea root, is very doubtful.

Sore nipples may indirectly be the cause of defective lactation. Slight excoriations, as well as chaps and fissures, can generally be healed by the use of the dilute solution of subacetate of lead, or by the liniment of lime, or by an ointment of balsam of Peru, or by a lotion containing borax and glycerine, or by the glycerine of starch. Frequently drying the nipple with a soft rag, and then dusting it with
spermaceti which has been finely powdered by the aid of a few drops of proof spirit, will be found exceedingly efficacious. Where the fissures are deep, light cauterization with nitrate of silver often answers well; or the painful spots may be painted with collodium, leaving the summit of the nipple free for the escape of the milk. A well-made shield, provided with an artificial nipple, will often enable a woman to suckle when she would otherwise be unable to do so. The child’s mouth must be looked to, so that if there are aphthae they may be cured.

β. **Galactophyca** (Γαλακτοφυξα = milk + φύγος = to shun) are the remedies employed to arrest the secretion of milk.

*Extract of Belladonna,* I believe is the most certain agent of this kind. Reduced to the consistence of treacle, by the addition of a little glycerine or water, it should be freely painted over each breast, night and morning, the parts being also covered with wet lint and oiled silk, or in a cold broth and water poultice. At the same time, one quarter or one third of a grain of the extract, may be administered twice or thrice daily, if a speedy effect be desirable. Sometimes it is advantageously given with quinine and camphor (F. 383).

Iodide of Potassium often succeeds, and is particularly useful if there be any painful engorgement of the glands. Six or nine grains daily, in divided doses, should be administered. Occasionally it may be better to give about ten minims of the tincture of belladonna with each dose; or the iodide can be combined with an active purgative salt, as the sulphate of magnesia (F. 31).

**Colchicum** has not succeeded well in the Author’s hands when given alone. But combined with the sulphate of magnesia, in the proportion of twenty minims to sixty grains, administered two or three times a day, it has appeared serviceable.

**Camphor** has been recommended. Three or four grains, with the same quantity of honey may be given in a couple of pills at bedtime; while frictions with the camphor liniment, or the compound camphor liniment, had better be employed twice or thrice daily.

**Tobacco** acts in a similar manner to belladonna. An ointment, made by boiling half an ounce of fresh tobacco in eight ounces of lard, is to be kept continually applied. Or this remedy may be employed in the form of a fomentation.

**Sage tea** is a popular remedy, which can certainly do no harm.

428. **Aphrodisiacs and Anaphrodisiacs.**

α. **Aphrodisiacs** (Ἄφροδιτικά = venery) are medicines which excite or increase the sexual powers.

Many remedies have been supposed to act as sexual stimulants, but the majority of those which have been recommended merely have the property of exciting the imagination. This is especially the case with **Must, Castorum, and Androgyris**; extravagant substances which ladies may use as perfumes if they please, but which should be abolished from the Materia Medica. The volatile sulphurated or allyle oils, obtained from allaceous and cruciferous plants (Allium sativum, Allium cernum, Sinapis nigrum, Cochlearia Armoracia, &c.), have had some slight repute. Indian hemp and Opium have been used; but the latter, at least, generally exercises a contrary effect to that desired. Cantharides, Turpentine, and Borax probably possess no aphrodisiac powers, though popularly thought to do so. The only remedies which may truly be supposed to act as sexual stimulants are the various preparations of Iron, Strychnina, and Nux Vomica, Quinine, and Phosphorus.

β. **Anaphrodisiacs** (Ἀναφροδιτικά = priv. + ἁφροδίτικα = venery) are generally believed to have the power of repressing the sexual feelings:

Nunsants (Tartarated Antimony and Ipecacuanha), drastic purgatives (Elate

Rium, Jalap, Colomel, &c.), Camphor in large doses, Carbonate of Soda, Hemlock, Tobacco, and Alcoholic drinks probably possess anaphrodisiac properties.
XIX. ELECTRO THERAPEUTICS.

Three forms of Electricity are used in medicine—
1. That of quantity: produced by chemical action and obtained directly from a battery, regulated by the number and size of the cells, and called the Continuous, Voltaic, or Galvanic current—often erroneously termed the constant current.
2. That of intensity: produced by induction, either from a magnet or a galvanic current, by long coils of insulated wire, and called the Induced, Faradie, or Interrupted current, or Magneto-electricity.
3. That of highest intensity: produced by friction on an electro-negative substance, and called Static, Franklinian, or Frictional electricity.

Galvanism, or the continuous current, is rarely applied without intermission, which is usually obtained by the rhythmal removal of one of the conductors from the skin. The intensity of a single cell of any form or chemical arrangement is quite insufficient to overcome the bad conducting power of the human body; therefore, when employing currents direct from the battery, many cells must be used, and as many as 50 or 60 should be contained in an apparatus intended for a variety of diseases.

Many forms of battery are now made, including the following:—

1. Polvermacher's, which are portable and cheap, but are very uncertain in action, and soon lose their power.
2. Frouhet, of Paris, lately exhibited to the Academy of Medicine a very portable form of battery—in fact, a modified voltaic pile; there has not yet been time to test its utility.
3. Goff's contains 20—50 cells, which are closed enebite cylinders, containing zinc and chloride of silver, in salt and water. The merits of this apparatus are portability and readiness for use. The great drawback is the difficulty of renewing the silver elements when worn out, which can only be done by experienced workmen. This battery, by the way, is "constant" as well as "continuous."
4. Forcon's portable battery consists of 20—50 small Smee (zinc and platinized silver) pairs, in enebite cells, which cells are raised by opening the containing box, thereby immersing the plates. The merits of this apparatus are its portability, neatness, and being easily managed, as it has radial for arranging any number of cells in circuit at once.
5. Moyer and Melzer's Galvan-Faradie apparatus has 20—30 carbo-zinc pairs in enebite cells; an induction coil, which can be connected with any number of the elements in the battery; a galvanometer; and a commutator. With terminals, or binding screws, connecting the conductors with the battery, the primary or secondary coils, and good regulating arrangements, this forms a compact, portable, and useful instrument, the chief drawbacks being expensiveness and too small number of cells for voltaic practice among muscles, &c.
6. Stohrer's continuous current batteries are made with 20—40 cells, zinc-carbon elements, in glass cells. The plates are hung from each side of a wooden element bearer (reaching the whole length of the battery), on the upper side of which slides a little apparatus with a commutator and binding screws, and the position of this "closing bolt" determines the number of cells in circuit.

Carbon is a favourite negative element, because it is equal to platinum as an electro-negative, is cheap and light, and may be made to displace a large amount of fluid in a cell, so that the level of the exciting liquid in a carbon battery is much lower when out of action (and carried about) than when in use.

7. The Becker-Muhrer battery is the best battery for consulting-room practice. It is a modification of the telegraph Daniell, and although its electromotor power is small, it is very constant in action. It is mounted in sets of 10 cells each, and 100 cells are required for a complete apparatus, which is of course a fixture. It requires careful attention every two or three months.
8. The Ledansoh is more constant than the last, and will continue in working order for five years, a little water being occasionally added. Thirty cells are mounted in a battery for the continuous current, by Gaffé; it is not very expensive.
The above-mentioned batteries have been considered simply as medical apparatus; Stöhrer's battery is useful also for electrolysis, the area of the plates being sufficient to produce a fair amount of chemical action, but not to injure the skin when used medically with sponge-conductors, as would be the case with larger negative plates.

For electrolysis, which is employed in medicine for the treatment of goitre, hydatids of the liver, and aortic aneurisms, batteries with larger cells are required, unless the operator has a battery with plates of ordinary size, capable of being coupled for quantity—i.e., three or four of the zincs to be coupled together, three or four of the carbons to be coupled together, each set forming a positive or negative plate.

Of Induction Apparatus, the following forms will be found useful:

1. Stöhrer's Faradic machine, facile princeps among medical induction coils. The secondary coil is wound on a bobbin, which slides over the primary coil, and thereby one means of regulating the force of the current is obtained. A tube can be made more or less to include the core of the primary, affording a second regulating power. The current break, or magnetic hammer, is a remarkably good one, and by it the rate of intermissions can be easily controlled; and a further means of graduating the strength of the apparatus is found in the mode of immersing the elements. Two kinds of Faradic machines are supplied, with one or two cells of the form of battery which is essentially Stöhrer's—viz., a cylinder of finely ground carbon, bored in its upper two-thirds, to contain chromic acid, and closed by a glass stopper. The carbon is surrounded by a cylinder of zinc, at a small distance, so that the fluid resistance is lessened. A glass cell is used, the area of its horizontal section little exceeding that of the carbon, so that the dilute acid, when the elements are not immersed, occupies only the lower third or fourth of the cell, and is not likely to be split in transport. The rod which raises the glass cell, to set the apparatus in action, can be fixed at any height, and thus another means of regulation is afforded.

2. In power no medical coil is equal to that of Duchenne, the apostle of Faradism. The large Volta-Faradic instrument has various contrivances for regulating the force and direction of the primary and secondary currents, and the rapidity of their intermissions. The coil is horizontal, the primary and secondary each enclosed in a tube, whose position determines the current-strength, which is further affected by more or less withdrawing the core. The trembling hammer is a very good one, and a pedal rheostat is provided for slow intermissions. So far the apparatus is excellent, but the battery is far inferior to Stöhrer's, which only requires fresh acids after months or daily use, and is so easily thrown in and out of action. Under Duchenne's coil are drawers, each containing a carbon fixed in the bottom, on which, in charging, a layer of sulphate of mercury is spread, on this a piece of cloth, and on that the zinc. Each drawer thus charged is pushed into place and the contacts are complete.

3. Wris and Son make a battery in many respects resembling Stöhrer's.

4. Pocket induction apparatus is made by Duchenne, Ruhmkorff, and Guiffé; each is useful. The latter makes one instrument in which the closed chloride of silver cells are used, so that it is always ready for use.

5. Most instrument makers supply the old form of Faradic apparatus, consisting of a coil (sometimes only the primary) excited by one or two Smece cells, and regulated by a column of water contained in a glass tube.

Magneto-electric machines are very much used, especially by patients themselves: readiness for use, ease of application, and absence of any fluid in their construction are their great advantages; the difficulty of graduating the strength is the drawback. The difficulty is surmounted in Duchenne's magneto-Faradic apparatus, which is the best and most elaborate of its kind. Force of current, rate of intermission, &c. are capable of most exact control.

2. Guiffé's machine has coils on the magnet instead of the armature, and the distance of the magnet from the armature can be altered, and thus the force of the current controlled.

3. The ordinary magnetic machines sold by Maw and Son and other instrument makers, are valuable because they never get out of order: uterine hemorrhage and asphyxia will not wait for repairs of apparatus.
For Franklinism, or Static Electricity, it is customary to use a Cuthbertson or
Holtz machine, with Leyden jars and Electrometer; a glass-legged stool, or large
piece of thick gutta percha or rubber matting, is needed fully to insulate the patient.
Frictional, or Static Electricity, at one time the only form of this agent
known, has been limited in its medical application of late years to few diseases.
But a revival of its use is likely to follow a general reception of Dr. Radcliffe's
theory, that animal electricity is naturally in the state of a positive charge.
("Dynamics of Nerve and Muscle." Macmillan, 1871.)
To retain the normal irritability of nerves and muscles, it is sometimes neces-
sary to supply their sheaths with positive electricity, which may be done either by
the frictional machine or by the continuous current. In the latter case it is neces-
sary to connect the positive pole of the battery with the earth, by means of a wire
to the chandelier (thereby conveying the negative electricity to the immense earth-
plate of the underground gaseous circulation), and then the electrodes being well
insulated, place the patient and the battery on a thick gutta percha mat, and any
part of the body can be made to receive a positive charge, for the preservation or
restoration of its irritability. This treatment is recommended by Dr. Tibeats,
in spasm of the facial muscles resulting from Paralysis, in hysterical contractions,
in some cases of wasting palsy, and in the excitatory state of the cord which some-
times follows myelitis.

A form of treatment called General Elecricization, has been introduced by Drs.
Beard and Rockwell (New York, 1871), on the principle that "Elecricization,
besides being a local stimulant, exercises an influence over general and local nutri-
tion entitling it to the highest rank among constitutional tonics." This is new
ground for electrical practice. The American practitioners generally appear to
combine much rubbing and shampooing of the surface with their Paralaxis and
Voltaism. The method under consideration consists in placing the patient with his
feet naked upon a sheet of copper connected with one pole, while the other pole is
connected by a moistened sponge with the left hand of the operator, who passes
his disengaged hand over the muscles of the patient, and sometimes over the whole
body. (Tibeats.)

The usual methods of applying electricity are direct and indirect localized
electricization. In the former the rhophores, or current-bearers, are placed directly
upon the organ, a muscle usually, to be Paralixed or Galvanized. (If the latter,
one of the rhophores must be removed and replaced on the skin at regular inter-
vals.) And in some cases it is well to moisten the sponges of the moist rhophores
with salt and water; this solution, being a better conductor than water alone,
facilitates in a greater degree the passage of the current to the deeper parts.
In indirect electricization, two points in the course of a nerve are selected for the
rhophores, and the current is thus made to affect the part supplied by the nerve.

The conducting cords used for connecting the battery or coil with the rhophores,
or current-bearers, are made of various materials—usually a strand of fine
copper wire covered with some insulating material; the best thing for the purpose
is a single copper wire, coated with one layer of gutta percha; it is cheap, easily
procured, and easily attached to instruments.

The rhophores, or electrodes, should have insulating handles of glass, ebomite,
ebony, or varnished wood, and if for sponges, the metal cups should be short and
broad, instead of being long narrow tubes since are often supplied.
Other moist rhophores are made with disks of brass, metal olive-shaped tips,
or globes of brass, to be covered with wash-leather and used wet. As above men-
tioned, this moisture increases the conductivity of the skin, and is needed when it
is desired to reach the deeper parts. For the skin itself a dry conductor—as a wire
brush or the operator's hand—is to be preferred. Special conductors are needed
for the larynx, urethra, rectum, uterus, &c.

General Instructions.—All parts of electrical apparatus require to be clean, and
the points of contact, binding screws especially, to be kept very clean and bright.

Dr. Poore, in his lectures (Lancet, May, 1874) advises that a medical man
should take his instruments to pieces, in order fully to understand their principles
and working. It is an excellent suggestion.

The currents from the primary and secondary coils are not materially different
in function, except in so far as their degrees of tension are concerned; and the poles
do not differ, so that their relative position is unimportant.
Great caution is necessary, more especially with the continuous current, in applying electricity to the spinal cord or brain; and before electroizing any part of the body, it is well to place the electrodes on some analogous part of the operator's surface. Nevertheless, the effect of a current differs greatly, as there is idiosyncrasy with respect to this as to other remedial measures.

Duchenne and others lay great stress upon Faradizing every bit of a muscle, either with an aërophone of large surface, or by carrying the sponge over its whole extent. The olivary conductors are useful for small muscles, as the interrossei and facial muscles.

The differences in action of the continuous and induced currents are due to—

1. The higher tension of the induced current, which enables it to overcome great resistances, and reach deep muscles and nerves.

2. The greater quantity of the continuous current gives it more chemical power, the Faradic current, as well as the continuous, decidedly affects nutrition by its action on the smaller arteries, and by inducing movements which produce tissue changes. (Duchenne.)

3. The direction of the continuous current is uniform, the induced currents changes constantly.

4. The continuous current flows in a regular stream as long as contact is maintained, the induced current lasts for a small fraction of a second. Partly due to this, probably, is due the fact pointed out by M. Gymn, and more recently by Dr. Poore, that a continuous current passing through a group of healthy muscles enables them to make unusually strong and protacted action. (Practitioner, Jan. 1873.)

Electricity in Diagnosis.—The main point on which the value of electricity in determining the locality and nature of disease depends, is the behaviour of muscles with the Faradic and Voltaic currents.

The apparatus of each kind should be reliable in operation, and capable of having its strength easily controlled. Begin by placing the conductors of a moderately strong Faradic current, on a muscle of the sound side, and decrease the strength until the point is reached at which contraction can only just be excited. The next step is to examine in the same manner the contractibility of the diseased side. Next compare the results of Faradizing the healthy and diseased sides by passing the current through the nerve trunk supplying the muscle before examined. When the galvanic or continuous current is used in this way, care must be taken in every trial to place the positive conductor nearest the centres, and to make the interruptions at the same rate in each case.

In hemiplegia, early in the disease, the Voltaic and the Faradic contractility will be found to be normal—if increased, there is central disease progressing, as in inflammatory softening, and electric treatment is contra-indicated. As time goes on, the paralyzed muscles usually lose their contractility by degrees.

In paraplegia, due to disease of a segment of the cord only, which cuts off the part of the cord below the damaged point from the brain, but leaves the paralyzed muscles in relation with healthy cord, the condition of the paralyzed muscles will be similar to that found in hemiplegia; Voltaic and Faradic contractility will be normal till impaired by long disuse, but there will in addition be excessive reflex action.

If the paraplegia is due to disease of the entire portion of the cord corresponding to the paralyzed parts, we have the condition sometimes called Spinal Paralysis in which there is lessened contractility, Voltaic and Faradic. This condition is also present in muscles supplied by the nerves which arise from a diseased segment of the cord.

In peripheral paralysis, due to disease in the course of a nerve cutting off the muscles from the nerve cells of the spinal cord, or to an affection of the peripheral extremities of the nerves, the muscles contract with the Voltaic, but not so well, or not at all, with the Faradic current.

In lead paralysis, the reaction with Faradism fails before the will has lost its control, but the Voltaic current acts with increased strength at this period, and the contractility remains after the voluntary power of moving the muscles is gone, and when atrophy has commenced.

In infantile paralysis, due probably to an affection of the periphery of the nerves, the loss of Faradic contractility is very sudden, and is usually complete in about four days (Barwell). A Voltaic current, of great strength, will also fail.
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after the disease has lasted some time, to produce any effect; but it should be
applied to the part affected a few times, and will usually restore the contractility.
(See " 바well’s Lectures," Lancet, 1872. 3.)

In rheumatic and in hysterical paralysis contractility is usually normal, but in
the latter the muscular sensation is nearly lost.

In progressive muscular atrophy, any muscular fibres which remain retain their
electrical susceptibility; diminished electrical reaction follows, and denotes the
gradual destruction of the muscles.

In the recognition of feigned disease, much assistance may be obtained from a
powerful induction apparatus.

DISEASES IN WHICH ELECTRICITY IS OF VALUE.

In cerebral disease Faradism is never to be used to the head. The continuous
current from 5—10 cells may be applied axially by placing one electrode on the
lower part of the spine, and the other at the back of the head; or transversely,
by placing one conductor on each temple, or one on the forehead and the other on
the occiput: and slow intermissions are to be made.

Melancholia, with stupor and refusal of food, in two cases under the care of
Dr. Williams, of Hayward’s Heath Asylum, yielded at once to the use of a
40-celled Stöhrer’s battery, and after a few daily applications both patients
recovered. The number of cells here employed must be considered as exceptional.
(Lancet, 26th Jan. 1873.)

In softening, nervous exhaustion, and epilepsy the continuous current has been of use. In the latter disease, Dr. Abbas recommends the negative conductor
to be placed on the seat of the "aura," and the positive on the mastoid process.

In hemiplegia and paraplegia of cerebral origin generally, no good can be done by
muscular electricity soon after the attack, as a certain degree of irritability
remains; and violent muscular tremors, to say the least, may result from Faradization.

Dr. Trench says that four to six months should elapse before treatment of the
muscles begins, and he gives some useful directions for managing "late rigidity." The
chief points are Voltaism of the rigid muscles, and Faradism of their
opponents.

When the proper time for treatment of the paralysed muscles has arrived, Faradize the whole of the surface of the organs affected, passing one of the con-
ductors over every part of the muscles: the application should last from 5—15
minutes and be repeated daily or every other day.

The end to be attained by Faradization in hemiplegia, or other forms of cerebral
paralysis, is to maintain or restore the conductivity of the nerves and the con-
tractility of the muscles of the paralysed regions which are liable to be impaired by prolonged disuse, so that as the nerve-centre recovers its function a path may be open for the first feeble impulses it is capable of issuing. When therefore, after a
proper interval, the reaction of the muscles to electrical stimulation, direct and
indirect, is normal, and the paralysis still persists, further electrical treatment will
be useless, as the cause is to be found in the character of the lesion of the nervous
centre.

The nutrition of paralysed parts may be improved, as well as contractility
restored, through the action of the current on the muscular walls of the bloodvessels.

Diseases of the spinal cord.—Tumours, severe injuries, sclerosis or softening of the
cord, are not likely to be benefited by electrical treatment; but paralysis resulting
from slight meningitis, or myelitis, anemia, or exhaustion, will probably derive
benefit from a Voltaic (15—30 cells) current applied by electrodes placed over the
nuchal and lower part of the back. Begin with few cells and increase the number
as may be indicated. The results of syphilitic disease are amenable to electricity
when the morbid process has been arrested, and the exudation removed, by iodide
of potassium. Electrical attention is to be directed to the peripheral expressions
disease.

Galvanization of the cervical sympathetic, of which so much has been said, is
recommended by Meyer in irregularities of temperature, heat in the skin of the
head or face, coldness of extremities, &c., and in primary arterial spasm, apoplectic
paralysis, progressive muscular atrophy, and neuralgias and spasms of the cerebro-
spinal nerves, and he gives illustrative cases. Benedikt also advocates this
mode of treatment for intracranial diseases. From ten to twenty cells are to be used. The electrodes are small sponges, the positive pressed deeply into the fossa under the ear, while the negative is placed either on the sixth cervical spine, or over the sternal origin of the sterno-mastoid muscle. The application must be at once stopped if giddiness or sickness appears.

In hysterical paralysis, galvanize the spine, and Faradize the parts affected - with a wire brush; a sponge electrode being placed over the spinal origin of their nervous supply.

Local paralysis is treated by directly Faradizing the affected muscles, if they respond; but if not, a strong Voltaic current should be used - say 40-60 cells - attacking every part of the muscles, and using slow intermissions. When the Faradic contractility returns - as is usually the case after a few applications of the battery current - Faradism and Voltaism are to be employed alternately. Medical treatment must be continued at the same time.

Peripheral paralysis, dependent on a wound of a nerve, will not be successful until the nerve wound is healed. In paralysis dependent on rheumatism, cold, or pressure, the induced current must be employed.

The treatment of facial palsy should begin early if it is of local origin or from cold, and very often the continuous current will be needed to produce muscular action. To produce an equable result, the treatment should be directed to each muscle affected, especially when using Faradism (Timbria.) When the affection arises from locomoR for ataxy, or cranial disease, Voltaism only should be employed.

Paralysis of the Ophthalmic Muscles.—Put one conductor under the ear, or let the patient hold it in his hand, and let a small electrode rest as near the muscle as possible, beginning with a weak Faradic current.

Paralysis of the Laryngeal Muscles.—Three methods of electrical treatment are applicable to these affections:—1. A gum elastic, metal-tipped conductor is to be passed down the pharynx, touching the back of the larynx, the second electrode being a wire brush applied to the front of the neck over the cricoid cartilage. Faradism is to be employed. Or 2. A proper laryngeal rhesophore is passed with the aid of the mirror into the larynx itself; the second electrode being a sponge on the front of the neck or elsewhere. 3. Electrization by sparks from a frictional machine has been of great use in emotional aphonia.

Glosso-labio laryngeal Paralysis.—The Faradic current should be applied by means of one pole placed on the nape of the neck; and the other to the inside of the lips, the tongue, and front of the neck.

Paralysis of the bladder requires Faradism by means of a peculiar electrode, consisting of a catheter, with a metal tip - the halves of which can be made to diverge after it is placed in the bladder; otherwise an electrode, shaped like a catheter, with a metal point, must be used, the second being the rectal rhesophore in the rectum. The bladder should be empty.

Constitution, when dependent on muscular inertia, or disease of the spinal cord, may be relieved by a Faradic current, employed by means of a special conductor for the rectum, and a sponge applied to the abdomen or over the sacrum.

Impotency may arise from want of erectile power in the penis, in which case apply the Faradic current to the organ with a wire brush or sponge electrode. When the condition is due to deficiency of semen, apply Faradism by moist conductors to each side of each of the testes. Seminal emissions are in some cases restrained, or even checked, by applying the current from 10-15 cells to the venumontium by one electrode, the second being placed on the perineum, three times a week.

Progressive muscular atrophy has been successfully treated in many cases by Meyer and Duchenne, by Faradizing the sets of muscles as they are attacked, and galvanizing the nerve trunks of the parts affected.

In locomotor ataxy, Faradization is employed for the diplopia, and applied to the skin relieves the muscular pains. Benedikt and Onimus have galvanized the spine with benefit to some cases.

Chorea is best treated electrically by the continuous current: the positive conductor is placed over the muscles affected, the negative to the nerve supplying them; or the current may be passed from the affected parts to the upper part of the cord, the negative conductor being placed on the back of the neck. Three cases treated by the writer in the latter mode, sometimes Faradically and sometimes by the continuous current, made a good recovery, iron being
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given at times in one case, and sulphate of zinc in another; but most improve-
ment was made after the medicine was discontinued.

Dr. Althaus recommends the alternate use of Faradism and Voltaism.

Writer's Cramp.—In this disease, as in toccollis and contraction of the sphincter, it
is advisable to Faradize muscles antagonistic to the affected ones. If there is tremor,
the positive charge should be applied.

Staking Palay, in recent cases, is to be subjected to the positive charge.

Tetanus.—Apply a current from 8–10 Dianelles, the negative pole being placed on
the spine, the positive on the tetanic muscles.

Diseases of Women.—Menorrhagia is often successfully treated by Faradizing,
or still better, galvanizing the uterus; one electrode being placed on the abdomen,
and the other, a sponge holder on the lumbar spines, or a rectal rheophore
passed up to the cervix uteri. The former is preferable, and according to Althaus
just as good.

Menorrhagia is relieved by Faradization applied in the same mode, or passed
from hip to hip, and from sacrum to pubis.

Uterine inertia.—The Faradic current may, in some cases, take the place of, or
assist ergot of rye. A proper uterine rheophore is passed up to the cervix uteri, and
a moist sponge is placed on the abdomen. A rheophore shaped like a long spoon,
the bowl filled with soft sponge, and the handle made of insulating material, is very
convenient for apply currents to the abdomen. Moisten the sponge with hot
water.

In a case of accidental hemorrage in a flabby multipara, the Faradic current
produced immediate expulsion of the child and placenta, shortly followed by a very
large clot.

Faradism of the breasts will often increase or restore the secretion.

Relief of Pain.—Neuralgia often yields at once, sometimes permanently, to
the Faradic current. Meyer applies it curatively as the "Electric Moxa," or a
wire-brush electrode held in one spot, and a very strong current. Voltaism is most
successful in this disease, however, and is applied with the negative pole, a moist
sponge on the point of origin of the nerve affected, and another sponge electrode for
the positive, placed on the painful spot, the time being determined by the amount
of action on the skin, as it is undesirable to cause any soreness. Five to ten cells
of a battery in good order will usually be enough for the face; ten to thirty for other
parts of the body. A little moral influence may be useful in the treatment,
as neuralgic patients are given to variety, and often abandon a remedial measure
if not at once successful, before it has had a trial.

Sciatica requires the application of a Voltaic current from 10–30 cells; the
negative on the lower dorsal spinous processes; the positive on the lower part of
the thigh or leg.

Rheumatism.—A continuous current, beginning with 5 cells, is used, the electrodes
being placed on the mastoid processes.

Rheumatic pains in the muscles are relieved by Faradizing the dry skin with
a brush or dry plate.

Hysterical Anæsthesia.—The best application is daily Faradization of the
affected parts with a wire brush, the strength of the current to be increased to the
utmost bearable limit. And while increasing the power of a Faradic apparatus, it is
well to keep the electrodes applied, always supposing that the operator is ac-
quainted with the energies of his instrument.

Deafness.—Electricity, in the form of a slowly interrupted Faradic current,
has done much good to old cases of nervous deafness. The meatus is filled with
water; an electrode, insulated except at the tip, is passed in; and the other
electrode is placed on the neck. The current must be weakened or discontinued if
it cause giddiness.

Asphyxia.—Use electrodes with button-like metal tips, covered with wash-
leather or sponge, and a Faradic current sufficient to cause contraction of the
muscles of the back of the thumb. Place one conductor on each side of the neck, out-
side the sternomastoid in its lower half, as in this place it will affect the phrenic
nervé, the sternomastoid and the scaleni muscles; let the pressure last the length
of an inspiration, then assist expiration by pressure on the abdomen. The strength
of the current at first failing to excite contraction, increase it to the full power of
the apparatus, and that failing, use Voltaism in the same manner. A double
electrode would be advantageous, conveying the current to the two sides of the
neck from one pole of the instrument, while the other pole is applied to the
epigastrium or seventh intercostal space.

Aortic AneurismS have in some cases been successfully treated by a current
from a few cells of medium size. Various methods have been recommended.
Nerves insulated to within a short distance of the point are passed into the sac;
according to some experimenters they should be connected with both poles of the
battery, according to others with the negative pole only, the positive rephore
being a wet sponge placed on the skin near the aneurism; according to others
again, the needle should be in relation with the positive pole. The object sought
is the obliteration of the aneurism by the coagulation of the blood which takes place
round the needle when the current is passing; the coagulum round the nega-
tive pole is large and loose, that round the positive small but more firm; it is not
yet definitely known which best answers the purpose required. The current must
be passed for some hours. Great pain is often excited.

Vascular Nevi are treated with remarkable success by inserting needles into
the tumour, which are connected with the negative pole of the battery, the posi-
tive being formed by a wet sponge.

Hydatids of the Liver.—The current from ten cells was employed at Guy's
Hospital, in some cases of hydatid cyst, and in eight instances proved very suc-
cessful. Two needles from the negative pole were introduced into the tumour,
and a moist conductor from the positive was applied to the skin of the abdomen.

For the practical use of electricity in medicine, see Tibbit's "Medical Elec-
tricity." (London, 1873.) For diagnosis, and for the application of the continuous
current, see Meyer's "Electricity in Pract. Medicine," translated by Dr. Hammond.
(New York, 1869.) For apparatus, see Duchenne's "Localized Electrization."
Part I., translated by Dr. Tibbits, London. For a comprehensive treatise on the
whole subject, see Dr. Althaus's "Medical Electricity."(New edition. London.
1874.)

XX. CLIMATES FOR INVALIDS.

429. General Observations.

Notwithstanding the excellent writings of Sir James Clark, Edwin Lee,
Granville, Burgess, Alexander Taylor, D. J. T. Francis, Scoresby-Jackson,
and others, many invalids migrate every autumn to the south of Franco, Italy,
Spain, &c., merely to find a grave. This happens partly because cases of far advanced
disease are still sent abroad, when they ought to be kept at home; partly, because a
situation unfavourable to the particular malady is selected, the laws of climate
being ill-understood; and, in some measure, because it is difficult to persuade the
sick that simple change to another country is only one of the means by which they
are to regain health. For although there can be no doubt that in change of air
physicians have an efficient remedial agent, yet it is certain that this remedy, like all others, is not of indiscriminate application, but must be prescribed with judg-
ment and discretion.

The diseases most likely to be cured or alleviated by the benign influence
of change of climate are the following:—Pulmonary consumption; chronic laryn-
geal and bronchial affections; asthma; disorders of the digestive organs, with the
various forms of dyspepsia; chronic gout and rheumatism. functional derange-
ments of the sexual organs; affections of the kidneys; obstinate neuralgia; and
hypochondriasis. A change is beneficial to strumous delicate children; is ineffec-
tual as a restorative during convalescence from acute or prolonged disease; and
especially is it one of the chief resources of "preventive medicine." In incurable
disease a visit to another part of the sufferer's country, or to some foreign station, will now and then serve to ward off complications, to give mental exhilaration, to promote appetite and digestion, and to be the source of tranquil nights.

There is no model climate: no country can boast of being perfect. Doubtless in some of the new towns about California remarkable climates are found. The luxuries on the Pacific side of North America are unknown to Europeans. Speaking of small towns near Placerville, Sir Wentworth Dilke says (Great Britain, 158), that except in the far interior or on the hills, "one even spring reigns unchangeably; every fruit and vegetable of the world is perpetually in season." All that the physician's knowledge and tact will enable him to do is to select that situation which possesses the greatest advantages and the fewest drawbacks for the particular case he has in hand. Phthisis, for example, is prevalent and fatal in all countries, though more so in some than others. Moreover, it must be remembered, that through the peculiar nature of zymotic (ζυμώ = to ferment) diseases, towns usually healthy are apt to be periodically visited by epidemics; and such places can only be avoided by consulting recent returns, or by instituting inquiries on the spot. In considering the salutary influence of any climate, our chief object must be to learn how many days during the winter and spring months it may be expected that the invalid will be confined to the house by bad weather. If the number be at all large, he can just as well remain at home. To decide the point, the nature of the sick man's disease, and constitutional strength must first be determined. Then as regards any given locality attention must be paid to its aspect, its drainage, and its elevation above the sea level; to the temperature and its equability; to the dryness or moisture of the soil and atmosphere, a degree of hardness often well borne when the air is dry, which is quite unbearable when it is moist; and to the nature of the prevalent winds. The amount of rain which descends in a season is not of such moment as the way in which it usually falls; a region liable to sharp heavy showers being much more favourable for the invalid, than one where it drizzles—like a Scotch mist—for days together. Luxuriant vegetation, though agreeable to the senses, may merely mean high temperature combined with moisture; conditions not favourable for the phthisical. So also the districts where marshy lands abound, or where occasional inundations occur, are potently unhealthy; for the evaporation of the water lowers the temperature, while the decaying vegetable matter becomes the source of malaria.

The beneficial effects of sea air are due to its purity, to the equability of its temperature, to the iodine it contains, and to the constant presence of ozone. The latter—the most powerful oxidizing agent, known—is a stimulant to all the vital functions; but if in excess it causes great irritation, particularly of the organs of respiration. Ozone, found also in the air of mountainous and rural districts, has the property of decomposing iodide of potassium, uniting with the potassium and liberating the iodine, which latter body may be detected by starch. Hence, test-papers saturated with a solution of iodide of potassium and starch are employed; the iodine, when freed by the ozone, uniting with the starch and forming blue iodide of starch. (See E. 389.)—While sea air by its invigorating and other properties has a certain amount of influence in preventing tuberculosis, it is by itself insufficient to cure this disorder. Mountain air is also pure, has an average low temperature, and contains a large proportion of ozone. There is a diminution of atmospheric pressure, but more wind and moisture at high elevations. Speaking generally, mountain air is tonic and bracing: it improves the appetite, lessens anemia, and especially promotes a healthy action of the abdominal viscera.

Although a classification of climates can only be artificial, and merely useful as affording a rough view of their nature, yet those countries mostly resorted to by invalids may be arranged in four divisions, viz. the relaxing, sedative, exciting, and bracing.

1. In the relaxing climates (e.g. Pisa, Madeira, Torquay) there is an elevated temperature with an excess of communicable humidity. They are unfitted for cases where we wish to restore diminished tone—to build up shattered constitutions; as well as for subjects with a tendency to hemorrhage.

2. In the sedative climates (Rome, Pau, Cannes, Venice) we find a freedom from great dryness on the one hand, and from communicable humidity on the other. We should not select these where it is desirable to quicken a slow circulation, or where the secretions are too abundant.

3. In the exciting climates (Nice, Naples, Montpellier, Florence, Genoa, &c.)
there is an excess of dryness, a highly electric state of the air, an excess of ozone, and during the early months of the year keen irritating winds. Such climates are injurious where there is nervous and vascular excitement, a tendency to inflammation, or where functional repose is needed.

4. In the bracing climates (Southport, Brighton, Mentone, Malaga, Algiers, &c.) the winter temperature while comparatively high is not oppressive, the air contains a moderate proportion of ozone, there is a certain amount of dryness, and the winds are less irritating than in the exciting class. They are generally to be avoided where there is a very sensitive state of the system, a tendency to apoplexy from hyperemia; and in many affections of the heart or large vessels. But, as a general rule, they are more suited to cases of pulmonary consumption, and to renal and hepatic diseases than either of the others.

It would be of little practical use to introduce an extended table giving an approximation to the death rate of different countries. But it is interesting to shortly notice, that on an average of ten years (1851—60), the annual mortality from all causes stands thus:——

For England and Wales, population in 1861 being 20,066,234, the deaths are 20 to each 1000 persons living.

<table>
<thead>
<tr>
<th>City</th>
<th>Population (1861)</th>
<th>Deaths per 1000 living</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>2,800,000</td>
<td>24</td>
</tr>
<tr>
<td>Bristol</td>
<td>60,000</td>
<td>27</td>
</tr>
<tr>
<td>Birmingham</td>
<td>212,000</td>
<td>27</td>
</tr>
<tr>
<td>Manchester</td>
<td>243,000</td>
<td>31</td>
</tr>
<tr>
<td>Liverpool</td>
<td>268,700</td>
<td>33</td>
</tr>
<tr>
<td>Dover</td>
<td>31,500</td>
<td>30</td>
</tr>
<tr>
<td>Hastings</td>
<td>28,000</td>
<td>18</td>
</tr>
<tr>
<td>Eastbourne</td>
<td>20,000</td>
<td>17</td>
</tr>
<tr>
<td>Brighton</td>
<td>17,000</td>
<td>23</td>
</tr>
<tr>
<td>Worthing</td>
<td>19,000</td>
<td>17</td>
</tr>
<tr>
<td>Isle of Wight</td>
<td>55,000</td>
<td>17</td>
</tr>
<tr>
<td>Scarborough</td>
<td>30,400</td>
<td>21</td>
</tr>
</tbody>
</table>

For Paris, population in 1862 numbering 1,696,141, the deaths are 28 to each 1000 persons living.

<table>
<thead>
<tr>
<th>City</th>
<th>Population (1862)</th>
<th>Deaths per 1000 living</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berlin</td>
<td>537,000</td>
<td>23</td>
</tr>
<tr>
<td>Vienna</td>
<td>612,000</td>
<td>40</td>
</tr>
<tr>
<td>Turin</td>
<td>178,600</td>
<td>36</td>
</tr>
<tr>
<td>St. Petersburg</td>
<td>520,100</td>
<td>41</td>
</tr>
<tr>
<td>Moscow</td>
<td>396,370</td>
<td>39</td>
</tr>
</tbody>
</table>

When the locality to which an invalid is to resort has been decided upon, he should, on leaving home, be provided with a concise code of laws in writing; or he must be directed at once to consult a physician in practice at the town selected. His route had better be marked out for him; he should be cautioned as to the rate at which he is to travel; rules must be laid down as to the regimen he is to adopt; while he ought to be reminded that warm clothing, especially flannel, will be required. Frequently it will be better to have cheerful apartments, with a southern aspect, secured beforehand; so that at the end of his journey a few days' perfect rest may be enjoyed. The object of the tour ought to be clearly explained, while he is to be warned not to expect too much, especially at first. The physician in sending his patient abroad, is merely placing him in the position most favourable to recovery, but still where other remedies and general precautions will be indispensable. Foreign travel would be more agreeable to most men, could the plague of sightseeing be dispensed with. But for the sick man to visit picture galleries, museums, damp old ruins, cold churches, &c., is frequently to frustrate the only object he should have in view, viz. the restoration of his health. In giving directions as to diet it must be recollected that travelling is very exciting and wearing to the invalid; that the organs of digestion almost always become more or less deranged; and that many articles of food which are taken with advantage in England, disagree in warmer latitudes.

The best time for leaving England is between the end of September and the middle of October. The patient with pulmonary disease ought not to return until May. In many instances the Author has found it advantageous for the invalid intending to stay away from home for several months to carry with him a few pure drugs, together with a brief account of their properties, doses, and modes of combination. Not that he is to be encouraged to tamper with his health by playing the dangerous part of the amateur physician; but good advice cannot
always be procured, or it may perhaps be had where only inferior drugs are obtainable for compounding the prescription. The medicines which are generally ordered are these:

- Sulphate of Quinia, 1 oz.
- Reduced Iron, 1 oz.
- Liquid Extract of Yellow Cinchona, 4 fl. oz.
- Spirit of Ether, 6 fl. oz.
- Liquid Extract of Opium, 2 fl. oz.
- Sulphate of Zinc (for emetics, lotions, collyria, &c.), 3 oz.
- Chloroform, 2 fl. oz.
- Bicarbonate of Soda, 4 oz.
- Compound Powder of Rhubarb, 6 oz.
- Aromatic Powder of Chaix and Opium, 3 oz.
- Tincture of Arnica (for bruises, burns, &c.), 2 fl. oz.
- Morphia & Ipecacuan Lozenges, ½ lb.

Scales and weights: an ounce and a minim measure: a small spatula: an enema syringe, the cheaper and more simple the better: with lint and strapping will complete the medical equipment. In certain special cases it may be well to substitute for some of the above drugs—blue pill, iodide of potash, colchicum, gallic acid, tincture of digitales, peperine prepared from the pig’s stomach, and oil of peppermint. Two invaluable medicines—brandy and cold liver oil—can be procured everywhere. An air cushion often proves serviceable.

La Poudre Insecticide is said in France, and is a very efficacious remedy against fleas. One or two teaspoonfuls, sprinkled over the sheets, serve to destroy these foes to comfort and sleep. Persian Powder, made with the leaves of a kind of groundsel, will have a similar effect; and so will camphor, though in a less degree. Mosquito curtains may also be taken from England; for mosquitoes are a serious nuisance to all, but especially to the invalid, and they continue venomous in the south until the cold nights set in.

430. Middlesex.

LONDON.—This city, the largest and most healthy in the world, is bounded by moderate hills; has a soil of loam and gravel, with clay resting on a bed of chalk; and is some fifty miles from the sea to the south and east. In 1861 the area of London was 122 square miles,—giving about 25,000 persons to a square mile of surface. The mean annual temperature is about 50° Fahr.; the average winter temperature being 35°, and that of the summer 75°. The nights especially are warmer than in the environs. The annual rainfall is 21-6 inches: the average number of days, more or less wet, being 178. Formerly certain springs in the neighbourhood of this city were used for medical purposes. Thus there were chalybeate springs at Hampstead and Sadlor’s Wells: aperient waters at the Beulah Spa, Kelburn, and Streatham. The aperient salt, as at Epsom, was sulphate of magnesia.

Delicate individuals are often better in London during the winter and spring, than in the country, owing to its greater warmth, and the greater steadiness of the temperature from day to day.—Asthma is such a precarious disease, that it is impossible to say beforehand what particular climate will suit any special example of it. But it is certain that very many asthmatics are better and more free from attacks in a large city, than in the clearer atmosphere of the country. Sufferers from this affection can especially apply to themselves the words of BACON—‘The goodness of the air is better known by experience than by signs.’—Pthysical invalids will find BROMPTON or CHELSEA the most sheltered spots of the metropolis; but if they are benefited by a bracing air they must resort to BAYSWATER or HIGHBURY, or the upper part of KENTISH TOWN, or to HIGHGATE.

HAMPSTEAD.—Many years ago, a mineral spring of repute in this village rendered it a fashionable watering place. It is still a healthy suburb. From the heaths, uplands of 200 acres in extent, there are many fine views. The air is pure and bracing, and well suited for children and convalescents. The low parts are damp and should be avoided. —Like GREENWICH, RICHMOND, LEWISHAM, DULWICH, SYDENHAM, &c., Hampstead often affords a convenient temporary residence for families driven from their town homes by the outbreak of some eruptive fever of other infectious disease.
431. Kent.

Margate.—The tonic and bracing air of this familiar locality renders it a very valuable temporary residence for many invalids. The atmosphere is extremely pure, the soil is dry and absorbent, and the water supply good. Perhaps no place could be named which is more suitable for restoring the health of children and young people afflicted with any form of scrofula. In strumous diseases of the joints, the most marked improvement usually results from a few months’ stay at this town. The bathing is good; though the flatness of the sands may be a disadvantage to the adult.

The mortality among the residents is very low. For a long series of years (1838 to 1862) the average annual death rate has been only 16 per 1000 for this class. The season lasts from the middle of May until the end of September. Being open to the north and east, the air is very bleak during the late winter and early spring months.

Ramsgate.—Is much frequented in the summer owing to its gaiety, facilities for sea-bathing, &c. It is an excellent residence for delicate children during the months of October and November, when the crowds of visitors have left. The climate is warmer than that of Margate, and more bracing than that of the south coast watering places. Broadstairs is situated in a pretty little bay about three miles from Ramsgate, and affords a very healthy and quiet sea-bathing place for children. The air is much less bracing than that of Margate.

Dover.—This sheltered town is generally full in the summer and autumn. As a winter residence it is colder and more exposed to high winds than Hastings, but it is not therefore unsuitable for invalids who can bear a bracing air. In January the weather is often fine and invigorating, but decidedly cold. The easterly winds which prevail during March are very trying. May and June are very agreeable months, as are August and September and October. The climate proves especially serviceable to those subject to strumous affections, chronic bronchitis, dyspepsia, nervous debility, congestion of the liver, &c.

Folkestone.—The beautiful country in the neighbourhood, and the fine tonic air of this town, render it a most agreeable residence from the end of May until the beginning of November. Sufferers from dyspepsia, nervous irritability, and overwork will derive most benefit from this climate.—Sandgate, about two miles to the east, offers a milder winter climate. With an exemption from fogs. The mean winter temperature is 41°76°. Consumptive and dyspeptic invalids, who find Brighton too bracing and Hastings too relaxing, may well winter at Sandgate, especially if they need quiet and seclusion.

432. Sussex.

Hastings and St. Leonards.—Situated about midway between Brighton and Dover, the climate of Hastings is very useful for invalids during the winter and spring months. Well sheltered from cold winds, with lofty cliffs and undulating downs, a beautiful and cultivated country, a dry and absorbent soil of clay overlaid with sand, a pure sea air, and free from all sources of malaria, Hastings can be regarded as offering a healthy sedative climate during six or eight months of the year. The bathing also is good in the summer.—The mean annual temperature is 50°; that of winter, being 40°, of spring 44°, of summer 60°, and of autumn 53°. The amount of rain in the year equals about 28.34 inches. South and south-westly winds are most prevalent during the winter and spring, but unless high they cause very little discomfort. In the neighbourhood are various springs impregnated with iron and carbonic acid, but they are not much used.

Hastings is suitable for cases of dyspepsia with loss of tone, chronic bronchitis, neuralgia, chronic rheumatism, gout, and scrofula. For the diseases of childhood it is a good locality. The Author has not seen phthisical subjects derive much benefit from it however; and sometimes he has thought that it seemed to induce hemoptysis. Dr. Mackness ("Hastings considered as a Resort for Invalids," London, 1842) has given a table of the causes of death during four years; from
which it appears that the total number was 855; of these 254 being from chest affection, and of these latter 161 from consumption,—viz. 91 inhabitants, and 70 visitors.

Although Hastings and St. Leonards now form one town, yet the former is the warmest and most protected, and hence best suited for very delicate invalids. Such as find Brighton agree with them from October until the end of December, may often advantageously spend January and February at St. Leonards.

EASTBOURNE.—Filling, as it were, a chasm between two cliffs, one of which is Beachy Head, this watering place is rapidly increasing in importance. It is visited in the summer for sea bathing; but is a good residence for invalids requiring a bracing air from September until the beginning of January. Cases of scrofula, consumption, hydrocephalus, and tubercles mesenterica often derive benefit here. It is also to be recommended in functional disorders of the heart and nervous system.

BRIGHTON.—The climate is bracing and restorative, and is especially beneficial to invalids during the autumn and early months of winter. Although the town is sheltered on the north and north-east by the South Downs, yet from the beginning of February until nearly the end of May cold north and easterly winds prevail, which prove very irritating, even to the healthy. The annual fall of rain is 20 inches. The weather is milder but more damp than the eastern cliff; but the tonic air of the latter agrees admirably where the circulation is torpid. The Old Steyne offers a climate intermediate between that of the western and eastern cliffs.

Diseases of a nervous hypochondriacal type are much relieved by the invigorating atmosphere of Brighton. Great good is also experienced when the vital powers are sluggish, when there is anaemia, or when disease of the kidneys exists. Strumous children and convalescents from acute disorders may also be sent to this part of the coast. It is unsuitable for individuals of an irritable or plectonic habit; for such as have a dry harsh skin, or any irritating cutaneous disorder; and for those who have a tendency to asthma, inflammatory affections, hamorrhoids, &c.

WORTHING.—Lying twelve miles west of Brighton and with an aspect almost due south, this town is fully exposed to the sun's rays. It is sheltered from the hot winds of summer and the cold of winter by the South Downs hills, which have an average height of 600 feet. Hence it is warm in winter until the middle of November, and cool in summer; the air being neither too bracing nor too sedative. The mean temperature for the year is about 51°. The rainy days are fewer, and the quantity of rain that falls is less than at Ventnor or in the West of England. Occasionally the east and north-east winds render the air very bleak. During summer the fine sands afford excellent bathing.

Worthing can be recommended as a good residence for convalescents; as well as for sufferers from lung diseases, hooping cough, scrofula, chronic rheumatism, and renal affections.

433. Hampshire.

SOUTHAMPTON.—At the head of the Southampton Water, which stretches from the Solent and Spithead into the interior of Hampshire for some eleven miles, is the clean and handsome town of Southampton. The climate is said to be mild and humid, intermediate in character between that of Devonshire and Hastings. Though sheltered by the high grounds behind it, and by the New Forest, yet it is unsuited for most invalids, the temperature being variable. The effluvia from the river at low water are often very unpleasant.

A short distance from Southampton Water is Netley. Here has been built the Royal Victoria Hospital; which is especially intended for the reception of invalid soldiers from foreign stations, and which has become the head quarters of the Army Medical School. The site seems to have been well chosen; while in most respects the arrangements of the building are excellent.

BOURNEMOUTH.—This favourite watering place, situated within a fine bay, in about ten miles from the western extremity of the isle of Wight. It is well screened by hills and pine woods from the north and north-east winds, but is exposed to the south-westerly gales. Owing to the nature of the soil, outdoor
exercise is practicable immediately after rain; while there are great facilities for easy walking. The mean annual temperature is 51°00'; that of winter being 42°38', spring 49°11, summer 60°18, and autumn 51°71.

It may be recommended as a quiet healthy resort, during the winter, for such invalids as are not affected by moderate variations of temperature, for those who are weak without having actual organic disease, and for persons returning from tropical countries. The climate is mild but not relaxing. During the spring and early summer months thick fogs, and cold easterly winds are rather prevalent. In summer there is good sea bathing; but the heat, and clouds of fine sand which rise when there is any wind, render Bournemouth unpleasant to many at this season.

434. Isle of Wight.

RYDE.—The towns on the north side of the island—Ryde and Cowes—are more suitable for summer visitors requiring change of air and of occupation, than for invalids needing a dry atmosphere and repose. The air is mild. Although the attractions of both localities are great, yet in neither is the bathing good.

THE UNDERCLIFF.—This is the best part of the island for a winter and spring residence. The Undercliff extends from the village of Bonchurch to Black Gang Chine, a distance of six miles along the south-east coast. The scenery is romantic, sea fogs are rare except towards the end of May and during June, and both soil and atmosphere are dry; while it is well protected, by a range of lofty chalk and sandstone hills, from the north, north-east, north-west, and west winds. It is raised some fifty or seventy feet above the level of the beach; and may therefore be represented, in the words of Sir James Clark, "as a lofty natural terrace, backed by a mountainous wall on the north, and open on the south to the full influence of the sun from his rising to his going down, during that season at least when his influence is most wanted in a northern climate".—The mean annual temperature is 51°35'; that of winter being 41°63, spring 49°66, summer 60°63, and autumn 53°68. The mean annual fall of rain is 23.48 inches; whereas at Newport, in the centre of the island, it is 33.60.—The best season is from the beginning of November until the end of May; between August and October it is too relaxing and humid.

The Undercliff, of which Ventnor is the chief town, may be resorted to by all those who need a genial and agreeable winter and spring climate. It allows the phthisical invalid to re-oxygenate his frame by almost daily exercise in the open air, at a season when he would be unable to do so at most other parts of England. The walks are fine and sheltered. The air is mild and yet of a bracing tonic character; and hence it differs from that of the Esk, which is of a more moist and relaxing nature. Patients with laryngeal and bronchial affections, hepatic and renal disease, atomic and nervous dyspepsia, and children with glandular swellings or strumous ulcers, do very well in this part of the island.

As a summer resort Sandown can be strongly recommended; its beautiful bay and open sea, its fine sands, its good bathing, its dry sandy soil, its good drainage, and its pure and abundant water supply being so many strong recommendations. For some few cases of disease not requiring a mild climate, Sandown may prove serviceable in the winter. The air is bracing as compared with that of Ventnor and Shanklin. The invalid can readily change from one of these spots to the other, if necessary.

435. Dorsetshire.

POOLE.—Standing on a peninsula, this old-fashioned town is an agreeable place for such as have to be driven from books and business to quiet and idleness. Owing to geographical peculiarities in its position, the tides in Poole harbour ebb and flow twice in the twelve hours.

WEYMOUTH.—This town, with the adjacent Melcombe Regis, is a favourite summer resort; the beautiful bay of the latter, with its fine sands, being well adapted for bathing. In the autumn and winter the temperature is equable; whilst the air is so pure that it is suitable for invalids from various diseases. Indeed, so healthy is the climate supposed to be, that Dr. Arbuthnot is reported to have jealously said,—"A physician could neither live nor die at Weymouth". As it is the nearest English port to Guernsey, seventy miles distant, it forms a station of the mailboats.
436. Deconshire and Cornwall.

**Budeleigh Salterton.**—A quiet retired village, nearly five miles to the east of Exmouth, in a small open valley on the seaside. For invalids who can climb the neighbouring hills it offers a mild and protected winter residence.

**Dawlish.**—Resorted to in summer for bathing, Dawlish may be recommended as a winter resort for those needing a mild air. It is more humid than Torquay. Protected from northerly and south-westerly gales, it is still unfavourable in the spring owing to the biting east wind which finds access to the picturesque valley on either side of which this small town is placed.

**Exmouth.**—The new portion of this town stands high, and is much exposed to wind from every quarter. The old part lies along the margin of the river and the base of Beacon Hill, and is damp; though it has the advantage of being protected from south-westerly and northerly gales. Invalids who require a bracing air may be benefited here; but the cold variable weather in winter makes it unsuitable for those with pulmonary complaints.

**Salcombe.**—Well sheltered, this is said to be the warmest spot on the south-west coast. For such as seek a mild and equable winter temperature, this small spot would be useful were it not for the want of convenient ground for exercise.

**Sidmouth.**—Recommended in summer and autumn for its bathing, Sidmouth is also a good situation for invalids requiring a mild relaxing air during winter. The mean annual temperature is 50° 2°; that of winter being 41° 9, of spring 47° 5, of summer 59° 9, and of autumn 61° 6. The annual average rainfall is 27° 9 inches, the average number of days on which rain falls in the year being 541. During the years 1863 and 1866 the returns show a much increased rainfall. The soil of the town is gravel on red sandstone: the ground dries quickly after rain, so that the invalid can usually walk out on the Esplanade within half a hour of a heavy shower. The water supply is good.

**Teignmouth.**—The mean winter temperature is six degrees higher than that of London, while that of summer is five degrees lower. On account of its exposed position it is not suitable as a winter home for the sick.

**Torquay.**—The climate of this favourite locality, while mild and equable, is less humid than that of many other places on the south-west coast. It has a southern aspect, and is sheltered on all other sides by heights. Mean annual temperature 52° 1°; the average for the winter being 44° 0, spring 50 0, summer 61 2, and for the autumn 53 1. The average annual amount of rain is 35 20 inches, and it falls on about 175 days in the year. The season is from September to May; and though it is not absolutely necessary for the invalid to leave during summer, yet it will be better for him to do so. November is generally very fine, being bright and sunny.

Torquay is useful in many cases of phthisis, chronic bronchitis, laryngeal affections, and rheumatism. In heart disease, when this organ is oppressed without much lowering of the vital powers; in inflammatory dyspepsia, with an over-irritable condition of the mucous membranes generally; and for invalids returning from tropical climates,—this town may be recommended.

The climate has a soothing influence upon the organs of respiration; but the effect upon the nervous, digestive, and muscular systems varies according to the situation which the invalid adopts for his residence. Dr. Radcliffe Hall recommends a feverish expectable consumptive patient to lodge in a sheltered part close to the sea, provided sea air does not disagree. When the feverishness is less marked, and there is danger from a sinking of the powers of life, a situation part way up the hills suits better; or the beautiful district of Meadfoot, protected from the east and north-east by an extensive range of cliff, may be selected if close proximity to the sea be desirable. After a residence at the sea-level for a time, removal to the houses on the southern faces of the hills often proves useful.

**Iffracombe.**—The fine and bold scenery of this town has attracted the attention of tourists during late years. Situated on the southern shore of the Bristol Channel, surrounded on three sides by the sea, Iffracombe can be recommended to
invalids who require a bracing air. The summers are comparatively cool; while the winters are warm and dry, but invigorating. Convalescents from tropical diseases often derive great good from wintering at Ilfracombe.

EXETER.—This fine old city, though standing upon elevated ground is sheltered. Except during July and August (when it is close and relaxing) it offers an advantageous residence for invalids requiring a residence away from the sea. Its mean temperature in winter is 41°4', spring 49°5, summer 62°0, and autumn 51°9. The average number of days on which rain falls in the year is 162, the annual amount being 31.90 inches.

Other neighbouring inland towns of Devonshire are agreeable and healthy: KINGSBRIDGE, TOTNES, NEWTON ABBOT, TIVERTON, CREDITON, CULLOMPTON, OTTERY, HONITON, &c. Of the moor towns it need only be said the air is moist and misty. DARTMOOR is bleak and chilly, the mornings and evenings even of summer being cold.

PENZANCE.—This seaport on the north-west side of Mount's Bay in Cornwall, is about ten miles from the Land's End. The climate is mild but relaxing. It has a mean annual temperature of 51°8"; the mean for the winter being 44°9, for the spring 49°6, for the summer 60°2, and for the autumn 63°3. As a winter residence for invalids it possesses the twofold advantages of warmth, and great steadiness of temperature during the day and night. The disadvantages are that it is much exposed to wind and storm, and that it is humid—the annual rainfall being 44°6 inches. It should be avoided in the spring.

Penzance may be useful in chronic bronchitis, in the earliest stage of consumption if there be a dry harsh cough with scanty expectoration, and in the case of aged invalids who derive benefit from a warm moist atmosphere. It is injurious in phthisis with relaxation of the mucous membranes and copious secretion, in cases of hemorrhage in atonic dyspepsia, and in debility of a low nervous type.

LAND'S END.—The climate somewhat resembles that of South Devon, but as regards humidity and exposure to winds it is inferior to it. Invalids should not remain in this district during the winter and spring.

437. Gloucestershire and Worcestershire.

Bristol.—This city, situated chiefly in Gloucestershire, but partly in Somersetshire, has nothing to recommend it to any invalid. A few years since, a gentleman who assured the Author that he always suffered either from gout or asthma, remarked that in Bristol he was generally afflicted with the former, but never with the latter; though directly he left this spot his breathing became impeded. Of the two evils he preferred a smoky city with gout, to pure country air with asthma.

Clifton.—Clifton is built on the sides and summit of a precipitous limestone hill, about one mile west of Bristol. In former days invalids resorted to this spot on account of its hot well: now it is in repute for its mild winter climate. The mean temperature for the year is 51°26'; that for the winter being 39°91, spring 49°79, summer 63°87, and autumn 51°49. The annual rainfall is 32°56 inches, and the number of rainy days about 163. The lower part of the town is much milder, and humid than the upper; and hence while preferable during winter for many cases, is too relaxing in the summer. The loftier situations (such as York Crescent, with its southern aspect and sheltered sunny promenade) are beautifully situated and well adapted for invalids during the summer and autumn months.

The Hot Well lies at the foot of St. Vincent's Rock. It yields an abundant supply of water at about 75° Fair, containing small quantities of magnesia and lime, with an unusual amount of carbonic acid gas. Owing to the latter, it might perhaps be advantageously taken in dyspepsia with irritability of the gastric mucous membrane; but it is very rarely, if ever, employed medicinally.

MALVERN.—Perhaps there are few more healthy and pleasant spots in the kingdom for a summer residence than this. Built on the declivity of the Malvern hills, situated eight miles S.S.W. of Worcester, the scenery is all that can delight
the convalescent, or the man who is broken down from overwork. The air is pure and invigorating; and is well adapted for bracing the system of such invalids as can bear an elevated site. Owing to the eastern aspect of the village, the strong winds of the winter and spring are severely felt.

There are two springs in the neighbourhood, which may be frequented for amusement. But the waters of St. Anne's Well and of the Holy Well are only pure and soft; the very small quantities of muriate of lime, sulphate of soda, and carbonate of lime which they contain, being useless in a medical point of view.

438. Lancashire and Yorkshire.

SOUTHPORT.—Situated on the west coast of Lancashire, between the mouths of the Mersey and the Ribble, this watering place is eighteen miles from Liverpool, and thirty-two from Manchester. The climate is bracing and sedative, the air dry but not irritating, fogs are very rare, and the atmosphere is light and pure. The temperature is variable, changes occur rapidly, while the mean for the year is 54°. The sea bathing is good at low water, the shore sandy, the water clear and pure and the bay so well sheltered that it is seldom too rough.

As a summer and annual residence Southport is useful in laryngeal, bronchial and pulmonary affections; in tuberculosis; in dyspepsia with constipation and flatulence; in chronic rheumatism; in some forms of paralysis; and in nervous depression after long illness.

GRANGE IN CARTMEL.—At the head of Morecambe Bay, sheltered by the hills of the lake district of Cumberland and Westmoreland, it preserves an equable climate, more mild than would be expected so far north. It may be resorted to early in spring and in autumn as well as throughout the summer, and makes a good northern winter residence for invalids. The scenery in the immediate neighbourhood is extremely pretty, and Windermere is within reach by a drive.

SCARBOROUGH.—Built on the slopes of a beautiful bay on the Yorkshire coast, in the form of an amphitheatre, this town is resorted to in the summer for its sea bathing. The season extends from June to October. It is suitable for nervous and hypochondriacal patients, for such as have been overworked and need change of scene and amusement, and for convalescents requiring a bracing air.

Close together at the Spa, there are two mineral wells,—the North or chalybeate, and the South or saline spring. There is not much difference, however, between their waters; those of both being mildly aperient, alterative, and slightly tonic. Their temperature is about 49°; and they yield nitrogen gas, carbonate of iron, chloride of sodium, sulphate of magnesia (most abundant in the South spring), sulphate of lime, and bicarbonate of lime. These waters may perhaps be useful in habitual constipation, dyspepsia, torpidity of the liver, and scrofulous complaints.

FILEY, seven or eight miles to the south of Scarborough, has many of the advantages of the latter, with the additional one for the invalid of quiet and retirement—not to say dulness. To the north is the ridge of rocks, known as "Filey Brig," while to the south are magnificent lofty cliffs, with Flamborough Head. The sands extend for some miles. At the top of the cliff, on the north side of the town, there is a saline chalybeate spring.

WHITBY.—The air of this seaport town is bracing and pure, the sands are extensive and afford good bathing, while there is a chalybeate spring which is thought well of for its mild tonic properties. The country round Whitby offers beautiful rides and walks. As at Filey, the season extends from the beginning of June until the end of September.

REDCAR.—This is still further north than Whitby, and enjoys locally the reputation of being the most bracing place on the Yorkshire coast. The surrounding country is beautiful.
439. Wales.

Llandudno.—Situated in Caernarvonshire, in the most attractive part of North Wales, this watering place has risen rapidly into favour during the last few years. It is often called the Welsh Brighton. The town lies between two bays—Conway and Llandudno. It is sheltered from the W. and E. by the Great and Little Orme's Head, huge masses of limestone rock which rise precipitously from the sea for many hundred feet. In summer the invalid will find a residence on the flat facing Llandudno bay most suitable. The beach is of sand; the bathing is good. For winter, the houses under the cliffs are to be chosen, owing to their sheltered position. The winter climate is comparatively mild.

The geologist will find beautiful and delicate fossils on the Orme's Head (Echinoides of many species, Brachiopods, and Lamellibranchiate shells, as well as several species of Gasteropoda); while the botanist will be delighted with the many uncommon plants to be seen in the neighbourhood. Only four miles distant is Conway, with its most picturesque Castle.

Penmaenmawr.—Situated at the foot of the mountain of the same name on the north coast near the entrance of the Menai Straits is more quiet than Llandudno, and is preferable to it on many accounts in summer. The bathing here is good, and there are numerous walks and drives in the neighbourhood.

Barmouth, on the west coast, has a mild and cestive climate. The bathing is not good, as account of the flatness of the sands, but it affords some of the most charming walks and drives to be met with even in Wales.

Tenby.—This is the most fashionable bathing place in South Wales. Placed on the Pembrokeshire shore of Caernarthen bay, the scenery of the neighbouring country is attractive and beautiful. The sands are smooth and good. The season lasts from June until the end of October. Invalids, however, can often stay with advantage during the winter; the atmosphere being then usually mild and spring-like, while accommodation can be obtained at moderate prices. There are not many days during the winter months when the invalid will be unable to take exercise in the open air.

The number and beauty of the Actiniae and other zoophytes to be found at Tenby have been made known to all lovers of natural history by Mr. Gosse. There are few places which can compare with it for the seaside naturalist. Moreover, the botanist, geologist, and antiquarian will find occupation in their favourite studies.

440. Ireland.

Kingstown.—This is one of the best frequented sea-bathing places in Ireland. Situated about seven miles south-east of Dublin, on the southern shore of the bay, the harbour is said to be one of the most splendid artificial ports in the United Kingdom. There are good walks in the surrounding country.

The sharp and bracing air of Kingstown proves injurious, during the latter part of the winter and the early spring months, to patients with disease of the lungs.

Holywood.—A small watering place much used by the residents of Belfast, from which city it is about five miles distant. The beach is sandy, and good for bathing. There are chalky springs in the vicinity.

Queenstown (Cove).—A town which consists of a series of terraces, built on the southern acclivity of Cove island, in Cork harbour. It is well sheltered from northerly winds; is exposed to the full influence of the sun; and the winter climate is admirable, being mild and equable. The mean temperature for the year is 51\(^\circ\); that for the winter being 44\(^\circ\), spring 50\(^\circ\), summer 61\(^\circ\), and autumn 52\(^\circ\). The annual rainfall is 33-25 inches; the average number of days on which there is wet being 131. The invalid should settle here about the end of October, and he will scarcely have a day during the ensuing four or five months when he will be unable
to take exercise in the open air. Owing to the way in which the houses are built, at a variety of elevations, the exact locality chosen must depend upon the patient's malady and strength.

All diseases needing a sedative and slightly humid atmosphere may derive benefit at Queenstown. Laryngeal, bronchial, and pulmonary complaints are especially relieved by a winter residence here; and so also are dyspeptic, strumous, rheumatic, and cutaneous affections. It is admirably suited for delicate children; and for convalescents from hooping cough, eruptive fevers, &c. Functional disorders of the uterine system are often cured by it. In the summer there is excellent sea bathing.—Passage and Monkstown are very healthy villages, situated on the river, about half-way between Queenstown and the city of Cork.

441. Scotland.

The climate of Scotland is remarkably equable throughout the year; the summer heat and winter cold being mitigated by the ocean winds. The mean temperature for the year is about 47°; that for the northern counties being higher than for the eastern. The prevailing winds are from a westerly quarter; blowing for more than two-thirds of the year from between the south-west and north-west points. In spring and early summer cold east winds prevail. The atmosphere is moist, nearly 100 inches of rain falling annually in some of the mountainous parts; though along the southern shores of the Firth of Forth the amount is under 30, at Glasgow about 28, and at Musselburgh not more than 24 inches.

The air of Edinburgh, though neither genial nor mild, is yet salubrious; and is said to be favourable to longevity, as well as to the development of the mental and physical powers. The city extends northwards to the shores of the Firth of Forth; Granton and the old fishing village of Newhaven being only separated from the town by a pleasant walk. The elevated situation of the city renders it exposed to violent winds; but the effect of these is favourable, at all events to the inhabitants of the Old Town, by driving away many impurities. As a place of education for youths needing a bracing climate Edinburgh has great advantages.

The old city of St. Andrews, situated on a rocky promontory some fifty feet above the level of the sea, has a wholesome genial climate. It should be avoided in the spring months, as it is then visited by a disagreeable chilly mist from the north-east; but from July until the end of October the air is pleasant and salubrious. Sufferers from rheumatism, or invalids with weak lungs, had better not remain long in this city. The rate of mortality among the residents is somewhat high.

On the western coast there are several localities which seem to possess good winter climates for invalids. The island of Bute, in the Firth of Clyde, has many advantages; the air being mild and equable, though rather humid. Its mean temperature for the year is 48°-2°; that for winter being 39°-62, spring 46°-66, summer 58°-06, and autumn 48°-59. The annual rainfall is 36°-62 inches; there being more or less wet on about 150 days. Snow rarely falls in the winter, and there is a freedom from fogs. The island is protected from the east winds of spring; and there are great opportunities for outdoor exercise. The climate being rather sedative, invalids needing a strong bracing air must seek it elsewhere.

Hypochondriacs, sufferers from habitual constipation or sluggish action of the liver, and young men, with a predisposition to phthisis, are often much benefited by a summer or autumnal walk through the Highlands; and certainly for the overworked literary or professional labourer nothing can be more invigorating than such a tour. "I verily believe that I should die," said Sir Walter Scott, "if I did not see the heather every year."

442. The Channel Islands.

All the Channel Islands are remarkable for their beautiful and varied scenery, for the temptations they offer to the zoologist and botanist, the mildness and humidity of their climates, the absence of great heat in summer and great cold in winter, and for the equability and duration of autumn. The east, north-east, and north winds which prevail in the spring, are disagreeable and injurious.
The climate of the Channel Islands is generally favourable in chronic disease, in asthma, in bronchial and intestinal disorders, and in affections of the urinary organs; while it is also suitable for convalescents from acute inflammations of the organs of respiration. The old and the young also are benefited by it; to them the effect is tonic and regenerating. Invalids from India and Australia may winter in these islands with advantage. They are unfavourable in chronic rheumatism, hepatic disorders, structural diseases of the uterus or ovaries, nervous dyspepsia, hypochondriasis, and in cases where there is a tendency to dropsy or haemorrhage. Pulmonary consumption appears to be as common and fatal among the inhabitants as in most other localities. — The most favourable time for a stay in either of the group is from August until the beginning of February. In some instances, a change for a time, from one island to another, is productive of good.

These islands may be reached by steamers from Southampton or Weymouth in less than twelve hours. Invalids, especially ladies and children, should choose their day of sailing so as to avoid a rough passage across the English Channel; and so that they may not have to land in small boats. The packets can generally enter the harbour of St. Peter’s Port in Guernsey, and that of St. Helier’s in Jersey, except near low water on a receding tide.

GUERNSEY, the most westerly and exposed of the islands, has an average annual temperature of 51° 50' ; that for winter being 44 2, spring, 47 7, summer, 59° 9, and autumn, 53° 8. Sea fogs are rare, except in the early part of the day in spring and autumn. The air is relaxing. The mean annual rainfall is rather more than 35 inches, falling in heavy showers on about 164 days, and more often in night than day. Percolation takes place rapidly through the gravelly soil; evaporation is also favoured by the brisk wind and sunshine. The walks are too hilly for most invalids. Guernsey is thirty miles from Jersey.

JERSEY is the largest of the group of islands, and the most important; being about twelve miles long, with an average breadth of five miles. The surface of hill and dale is well wooded; the coast is rocky and precipitous; and it is exposed to the wind from every quarter. The mean yearly temperature is the same as for Guernsey; during three quarters of the year the average being higher, while it is lower in the winter. Nevertheless, the latter is mild, frost and snow being very rare. The daily range of the thermometer is small, though it is greater than in Guernsey. St. Helier’s contains nearly half the population of the island; but it is more foggy and humid, and therefore less suited for invalids than St. Aubin’s, which lies three miles to the south-west of it. The sands are good for summer bathing.

The air of ALDERNEY and SARK is usually said to be drier and more bracing than that of Guernsey; while that of the latter is less relaxing than that of Jersey.

443. South of France.

PAU.—This, the chief town of the department of the Basses Pyrénées, is about 128 miles south of Bordeaux and 56 miles east of Bayonne. It may be reached from London in 48 hours; and the season lasts from the beginning of November until the end of May. The mean annual temperature is about 60°. The average for September, October, and November is 56° 4; that for December, January, and February 42° 3; while for March, April, and May it is 54° 0. The annual rainfall is about 43 inches, the rainy days numbering 119. Owing to the gravelly soil any quantity of moisture is readily absorbed. DR. PLAYFAIR, quoted by Sir JAMES CLARK, sums up the nature of the climate, thus:—“ Calmness, moderate cold, bright sunshine of considerable power, a dry state of atmosphere and of the soil, and rains of short duration. Against these must be placed,—changeableness, the fine weather being as short-lived as the bad, rapid variations of temperature, within moderate limits. In autumn and spring there are heavy rains.” The air in December, January, and February is dry, and out of the sun, cold; but even in these months the rays of the latter are so powerful that the pedestrian ought to protect his head with an umbrella. There are very few days on which the invalid will be unable to take exercise between 12 and 3 o’clock. The evenings, however, are chilly, and the nights cold.
CLIMATES FOR INVALIDS.

Pau is not influenced by the west-north-west wind, the Orieus of the ancients; nor by the north wind or Bise which produces a biting cold; nor by the north-west wind or Mistral: in fact the climate is calm and soothing; high winds being rare. According to some physicians Pau is useful in cases with a scrofulous taint, in preventing generation of tubercle, and in checking softening of tubercle when formed. Dr. Taylor states, that the predisposition to disease favourably influenced by this town, may be summed up in one general principle:—viz. wherever it depends upon increased nervous and arterial action, permanently produced, either by temperament or by some cause leading to more active disease.

The climate is sedative (not to say depressing), modifying nervous and vascular irritation; and therefore beneficial in irritations of the mucous membrane of the air-passages or alimentary canal. It is unsuitable where the powers of life are declining; in chronic catarrh or bronchitis of old people, with loss of tone and excessive expectoration; in chronic rheumatism or gout, with debility of digestive organs; in tendency to apoplexy from passive congestion; in chlorosis; and in disorders attended with congestion of the venous system and diminished nervous energy. In all these cases the climate of Mentone (from the commencement of November until the end of February) is the remedy. In short, Pau is to be chosen when there is "functional derangement of a tonic irritable type," which paves the way to organic mischief. Acting on persons in health the air lowers the tone; makes the sanguine, phlegmatic; and the choleric, melancholic.

BIARRITZ.—A fashionable sea bathing village on the shores of the Bay of Biscay, some 5 miles south-west of Bayonne, and 65 miles from Pau. The roads between the two places are excellent, and communication by diligence or omnibus very easy. It can be reached from London in about 48 hours. The air is warm; the temperature of the sea high; and there is always a soft invigorating sea breeze. When benefit has been derived from a winter at Pau, it is often advisable for the patient to go to Biarritz for the summer; returning to Pau for a second winter. The sandy gently-shelving beach is well adapted for bathing, which is no slight luxury in water at a temperature of 75° Fahr.

According to Dr. Henry Bennett, the climate not only renders Biarritz a favourite summer and autumn watering place, but puts it among the eligible winter stations of the south. It is cheaper also in winter than summer, being then almost deserted by fashionable visitors. In cases of severe disease it is not equal to Pau, Ajaccio, or Mentone, the winter breezes from the Bay of Biscay being often very violent.

MONTPELLIER.—The reputation which this city formerly enjoyed as a winter residence for consumptive patients has entirely gone. The climate is dry, irritating and changeable; and though the heat of the sun is great, yet the winter winds are cold and unbearable. Mean temperature of the year 50°-6°; winter 44-2, and summer 76. Phthisis is very prevalent amongst the native population. Invalids with relaxed mucous membranes and copious secretions, sometimes find advantage from spending the autumn here.

MARSEILLES.—This city, second only in importance to Paris, offers no residence for the invalid. Pulmonary consumption annually destroys a large number of young women and men. Catarrhs, pleurisy, and pneumonia are common; and so are cutaneous affections, diseases of the generative organs, and cancer.

Mean annual temperature 58°32°; winter 45-22, spring 55-91, summer 72-93, and autumn 59-21. Although these figures are high, yet the winter is sharp and cold, the winds being high and prevalent—especially the mistral (north-west). In spring, the variations in temperature are sudden and dangerous, and there is much rain. During summer the heat and dust and insects are intolerable.

HYÈRES.—This little town is agreeably situated, about two miles from the shores of the Mediterranean, and an hour and half's drive from Toulon. The climate is clear, pure, dry, and tolerably mild. The greater portion of the town is sheltered from north and east winds; while it is open to the south, benefiting by the influence of the sun and sea breezes. But it is exposed to the mistral, as there are no protecting hills on the north-west; and this blows frequently during the first three months of the year. It has been thought one of the best localities in the south of France for the winter abode of invalids with pulmonary disease, as there is much fine weather, without great variations in temperature. The mornings
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and evenings, however, are cold; and hence, remembering too the prevalent winds, it should not be recommended. In summer the heat and dust prove very annoying. The best season is during April and May, or from the beginning of September to the end of November.

Cannes.—An agreeable seaport, on the shore of a small bay, well protected from cold winds. It has a climate more moist and sedative than Nice, and less so than Pau. The lower parts of the town should be avoided, as the drainage is bad. The overworked man of business, seeking fresh air, genial sunshine, and a locality possessing a combination of fine sea and mountainous scenery, may advantageously winter here. Cases of nervous dyspepsia are particularly benefited, and so are some forms of phthisis.

In the summer Cannes is resorted to for sea bathing, the extensive sands being well adapted for this purpose. Sand baths are sometimes used for the relief of rheumatic and paralytic affections of the limbs; the patients being immersed up to the chest in sand warmed by the sun. Like mud baths they may serve to amuse the invalid, while he is breathing pure air and living by regular meals.

Nice.—The reputation long enjoyed by Nice for salubrity, has been found to have been greatly overrated. Protected towards the interior by the Maritime Alps and the Estrelles, cooled by the brises of the Mediterranean, and with a mild dry climate, it would seem to be a favourable locality for phthisical patients. But notwithstanding these advantages the valley is exposed, during winter and spring, to cold irritating winds from the east and north-east; and the Nisands then suffer much from catarrh, ophthalmia, skin eruptions, pneumonia and irritable gastric affections. The mean temperature for the year is 59°01"; for winter 46°33, spring 55°32, summer 71°33, and autumn 61°52. The variations between the warmth of night and day, of sun and shade, are remarkable. The annual rainfall is about 26 inches; most falling in October and November, leaving the other winter and spring months comparatively dry.

M. Carnière has compared the valley in which Nice is situated to an open fan, the arch of which is formed by the mountains, and the point by the shore, where the Var discharges itself into the sea. But the mountainous semicircle is intimated in parts, and down these interruptions the winds blow from certain points and injuriously affect consumptives—The mistral is "the scourge of the Mediterranean shores of France and Sardinia." It may continue one, three, or seven or more days at a time; in autumn and winter it blows frequently, and hence it is absurd for invalids requiring a mild temperature and calm atmosphere to winter at Nice. The south east wind, or sirocco so injurious on the continent of Italy, becomes changed into a mild beneficial breeze during its transit across the Mediterranean to Nice; and hence it modifies winter cold, and summer heat and dryness. La Croix de Marbre, the suburb of Nice inhabited by the English, is most unfavourable for pulmonary invalids; being exposed to the libeccio (a relaxing south-east wind), and to the blighting influence of the mistral. The invalid if he will go to Nice should live at the foot of the heights, in one of the shady valleys open to the south. The brilliant sun entices him out of doors, and then the blighting piercing wind attacks him, and clings around him; no furs no heavy cloak, no flannel will keep out the cold. He ought not to venture into the open air too early in the day, nor should he remain there later than one hour before sunset. The bills of mortality of the Nisands give one seventh of the deaths as from phthisis. That "Nice is one of the last places to which a foreigner labouring under tubercular phthisis should resort," is the opinion of Dr. Burgess. It is also unfavourable for nervous and susceptible invalids. The air may sometimes be beneficial in chronic rheumatism and gout; in all uterine derangements connected with a relaxed and torpid state of the system; for delicate children of a stramous habit; and for invalids returning from tropical climes. The stay should extend from the middle of October until the beginning or middle of January; for although the season lasts until the end of April, yet the invalid will seldom derive benefit from prolonging his residence beyond January. The Author has been told that there are well-conducted Pensions both at Nice and Cannes which are preferable to the hotels as being more quiet and homelike.

Villa Franca.—This little town, a short distance from Nice, has a climate somewhat warmer and drier, and is less exposed to the north and north-west winds. The vegetation is luxuriant and early.
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MENTONE.—Lately a small Italian town, but annexed to France in 1860, Mentone offers one of the most sheltered stations in the south of Europe. It is situated on the northern shore of the Mediterranean, at the foot of the Maritime Alps, and twelve or thirteen miles to the east of Nice on the road to Genoa. The bay, in the centre of which the town is placed, is completely protected from the north, north-west or mistral, and north-east winds by the mountains; while owing to the absence of fogs, the paucity of rain, and the great power of the sun, the air is very pleasant during the winter months. The mean temperature is a little higher than that of Nice. The night temperature is also mild, and not subject to great variations; so that many invalids are able to keep the air of their bedrooms pure by sleeping with the windows slightly open.

From the beginning of November until the end of April the climate is genial and bracing. The invalid must not remain during the summer. A residence here is very useful in phthisis, when the disease has not passed beyond the first stage; and even when it has reached the second or third, provided the tubercular deposit be limited to a part of one lung. It is also beneficial in chronic cases of consumption; chronic bronchitis and chronic gout and rheumatism. Strumous children improve remarkably. Those who visit Mentone prefer the eastern bay, some the western; but whichever be chosen, care must be taken to select rooms having a south aspect, and with the bedroom not on the ground floor. According to Dr. Henry Bennett pulmonary consumption is a rare malady among the native population; the deaths from it being only 1 in 55, instead of 1 in 5 as in London and Paris.

For the sake of those who are not overburdened with wealth, it may be as well to remember that Nice and Mentone are both extraveragant places, while San Remo is much cheaper, and the air is just as good during the winter. Moreover, twelve miles east of Mentone and seven miles west of San Remo lies Bordighera. It faces the south, in a fine bay protected from the due east and west winds by ranges of hills. The air is mild and exhilarating. The walks are good, being well protected from dust and wind. The palm, olive, orange, and lemon all flourish on the hill, nearest the town. And lastly, the pleasure of staying at San Remo, or at Bordighera will be enhanced by reading a very charming tale—Doctor Antonio.

444. Corsica.

This island, one of the most important in the Mediterranean, has shores mostly low, while the centre is mountainous. Corsica is healthier than the Riviera, and its air is more genial. The olive is indigenous. The scenery is grand. Within a few hours' drive of Ajaccio are several villages in the hills (Orezza with chalybeate springs, Gavone with sulphur springs, &c.), where invalids might reside during the summer after having wintered in Ajaccio. This clean and cheerful little town, on the west coast, is said to be especially charming during the months of January and February. The gulf of Ajaccio offers an excellent harbour for yachts; while it is protected from all winds but the south-west, by its semicircle of grand mountains in the distance. The sandy shore, with beautiful rocks, is greatly to be preferred to the shingly beach at Nice. The climate is as warm as that of Nice, and it is exceptionally healthy. The air of Ajaccio is more soothing (less stimulating) than that of Mentone, without being relaxing like that of Madeira. Napoleon Bonaparte was born at Ajaccio on 15th August, 1769.

Ajaccio is the only locality in Corsica that appears thoroughly eligible as a winter residence. The climate of Bastia is warm and agreeable; but the town has a small tideless port, and is exposed both to south-east and north-east winds. Dr. Manvunor, the surgeon of the civil hospital at Bastia, states that nearly all surgical wounds heal at once by first intention, while purulent absorption is almost unknown. Intermittent fever prevails in parts of Corsica towards the end of summer or beginning of autumn. It may be reached from Marseilles by steamer in fourteen or sixteen hours, or from Nice in eight or nine hours, and is thus within about forty-eight hours of London.

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445. Spain and Portugal.

ALICANTE.—Lying along the shores of a bright open bay in the Mediterranean, is this healthy town. It is sheltered on the north and north-west sides by a limestone rock some 700 feet high, is free from malaria, and has a mild dry air with comparative immunity from high winds. The mean annual temperature is 63°7, that for winter being 52·1. The rainfall is very moderate. In summer the calm open sea, and sandy beach, afford good bathing. In winter, whatever may be the temperature of the morning air, the middle and after part of the day will generally be mild and calm.

As a winter residence it may be recommended to such as need a dry and somewhat stimulating climate. It has been found useful in chronic bronchitis, with excessive secretion; as well as in atonic dyspepsia.

BARCELONA.—This, the chief city of Catalonia and the second in importance of Spain, has a mild winter air. It is open to the sea on the south and south-west, and is partially protected from westerly and northerly winds by the hills at the back. The mean annual temperature is 63·14°, that of winter being 50·18; while there is rain on some 69 days in the year. Invalids requiring a rather stimulating and dry climate may reside here; but it cannot be strongly recommended. April and May are the most uncertain months.

CÁDIZ.—The semi-insular position of this commercial town, on the shores of the Atlantic, would seem to point it out as a suitable winter residence for those requiring sea air. The climate is soft, humid, and relaxing; the winters are mild and the summer temperate; the weather is showery, especially in winter and autumn, but the soil being porous, it soon dries; and there are few days during winter on which exercise cannot be taken in the open air. The mean annual temperature is 62·7°; that for winter being 52·30, though very often at this season the thermometer, in the shade, will stand at above 60. Rain falls on about 100 days in the year; but it generally comes in showers, with intervals of sunshine.

This town may be recommended for some irritable affections of the chest, and in certain cases of heart disease. Women with any tendency to ovarian or uterine disorders should avoid Cádiz. The stranger will find it best to reside in the central portion of the town,—as on the sunny side of the square of General Mina or San Antonio, or in one of the lesser plazas. The wall (Muralla del Mar) which nearly surrounds the town has on its summit an agreeable walk.

MADRID.—The capital of Spain, situated nearly in the centre of the Peninsula, is perhaps an attractive city for the tourist; but the irritating and stimulating character of the climate renders it an unfavourable one for the English invalid. The mean annual temperature is 57°; but the range is so great that Dr. Francis has observed a thermometer pointing to below freezing a little after sunrise, stand at 106 at 3 o'clock p.m.—The winters are raw and long, with hard frosts and piercing cold winds; in summer the heat is irritating and oppressive, so that even the Spaniards cannot stand it.—“The subtle air,” says Ford, in his Handbook, “which will not extinguish a candle, puts out a man’s life. * * * * * No wonder, according to Salas, that even the healthy of those born there live on physic.”

MALAGA.—Dr. Francis speaks very highly of Malaga, which, indeed, seems to be the El Dorado of cities; for he asserts that there is no place in Spain, nor in the whole of Europe, as far as our present information goes, that possesses a climate at once so mild and equable, with so little variation from day to day. This seaport city is situated on the shores of a bay of the Mediterranean, 66 miles east-north-east from Gibraltar. The mean annual temperature is 66·11°, that of winter being 54·41; the heat of January corresponding with that of May in London. The air is neither too moist, nor too dry; and a lofty mountain range forms a protecting background to the winter winds. The annual rainfall is said to be only 16½ inches.

The longevity of the people is remarkable: persons aged from 80 to 90 being seen going about the streets in full possession of all their faculties. Though the ratio of mortality is one in 37, yet it must be remembered that this is larger than it would otherwise be, not only from the excessive mortality in early life (42·3 per cent. during the first five years) owing to the mothers not nursing their infants, but
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Likewise from the presence in the town of a large garrison and a crowded convict establishment. The principal drawback seems to be the terral, a cold harash wind from the north-west, which occasionally blows during the winter with great force. It causes restlessness and oppression at the chest, where there is any pulmonary affection. The air is also unfavourable in cases of disease of the nervous centres.

- The invalid who requires a warm, dry, and gently tonic climate, with constant sunshine, may well visit Malaga for the winter. A residence here is especially useful when phthisis seems to threaten, or even when it is present in an early stage. He should live in the newer part of the town, where the soil is sandy, and through the centre of which runs the Alameda, a fine broad promenade bordered by cheerful well ventilated houses. The Spanish custom of taking a siesta in the middle of the day ought to be adopted. There is regular steam communication with Liverpool, the voyage lasting seven or eight days.

VALENCIA.—This city, built upon the great plain of Valencia, is about three miles from the sea. It may be reached in seven days from England, by way of Marseilles. The town is very clean, the climate unusually dry, though the water evaporated by the system of irrigation pursues impregnates the air with moisture; there are no cold fogs; the wind is soft and mild during winter, in summer refreshingly cool; and the mean annual temperature is 63° 5', that of winter being 49° 7'. The cold is often appreciable in early morning and after sunset during winter, but it is warm by midday. The springtime is the best—from the middle of February till the beginning of May: autumn is to be avoided, owing to the miasma from the rice plantations. Consumption is not uncommon among the poor; but then in no part of Spain does the labourer work harder, or subsist on a more meagre diet.

Useful for the overworked man of business, semi-invalids and hypochondriacs, individuals with impaired health but no organic disease, gout and rheumatism, calculous affections, albuminuria, and nervous dyspepsia. There are several towns within easy reach of Valencia where the invalid may go for a short stay, such as Alcira, Carcajente, Jativa, San Felipes, &c.

SEVILLE.—The famous capital of Andalucia, and the city of Figaro, possesses a soft and tonic climate. It may be visited by the hypochondriac, by convalescents from lingering disease, &c.; or the invalid who has wintered in Malaga might advantageously stay here during May. The best part of the year is from November to March. There is considerable rain in October, November, and April. Occasionally during the summer the sultry and irritating levante or east wind prevails, giving rise to fever, ophthalmia, mental irritability, and neuralgic affections.

ARANJUEZ.—Situated 24 miles south of Madrid, on the left bank of the Tagus. The season consists of April and May, during which months the climate in soft and most agreeable. The water of the town contains a little sulphate of soda, and hence it sometimes proves aperient if taken largely.

LISBON.—The capital of Portugal has a dry and bracing climate; though the changes from sunshine to rain, from heat to cold are sudden and remarkable. Hence it is not to be recommended for pulmonary invalids; while, moreover, phthisis is very prevalent among the inhabitants.

The mean annual temperature is about 62° 0°; that for winter being 52° 9°, spring 59° 6°, summer 70° 94, and autumn 62° 48. The annual rainfall is 23 inches, most wet days occurring in winter. The predominating winds are those from north-east to south-east, and to them is due the cold of winter.

Dr. Francis says that the best situation for an invalid who wishes to pass the winter in Lisbon, is the upper part of the Val de Pereira; a continuation of the valley in which the new part of the town and the public gardens lie. "Here, upon the southern slope of the hill, are a few villas in the midst of orange gardens, which are well sheltered, and afford choice views over the town and river. Those who prefer a country residence, may select the neighbourhood of Belem, a village on the Cinta road, about a league from Lisbon. This place is in high reputation, among the Portuguese physicians, for the purity of the air, and it is here they send their convalescents."

CINTRA.—A summer residence of the court and wealthy inhabitants of Lisbon, from which it is only sixteen miles distant. Frequent breezes, a humid soil, and an abundance of vegetation render the summer air cool and healthy. The winters are wet and cheerless.
446. Gibraltar.

This strongly fortified portion of the British possessions occupies a mountainous promontory near the southern extremity of Spain, at the entrance of the Mediterranean. The town is built on the western aspect of the rock. It is unsuitable as a residence for invalids. For though the average winter temperature is 57-93°, yet the prevalence of the south-east wind—the levante—renders the locality cold, raw, and very unpleasant. Snow and ice are very rare, but there is considerable rain. The annual rainfall is 43 inches.

447. Italy.

Lago Maggiore.—The largest of the lakes of Northern Italy. Along its shores are small towns resorted to by English invalids in summer. *Baveno, Arona,* and *Sta. are the most frequented.* But the climate, though clear and pure, is often marred by the violent thunderstorms which prevail in summer; there are heavy dews at night; while the neighbouring glaciers make it cold when the wind blows from that quarter. The air is injurious to phthisical invalids, but useful in general debility, in dyspepsia, and for such as need a cool tonic atmosphere.

Lake of Como.—Situated to the north-east of Milan, from which it is not far distant. The air is genial and mild, the temperature equable, and the heat not oppressive owing to the alternate play of the tivano or north wind during the night, and the breva or south wind in the day. For ordinary invalids in summer the best situations on the lake are *Bellagio,* *Torno,* and *Bellagio,* but for the consumptive *Varenna* is more suitable. Cadenabbia and *Trémezine,* on the shore near the middle of the lake, are very beautiful spots; while according to Dr. BURGES, *Piramita,* the most noted spot along these classic shores, the supposed residence of Pliny, will not yield precedence to either in climate or situation. The cold in the winter is great, especially at the northern extremity of the lake. No part of Italy perhaps is so suitable for the consumptive in summer, as the Lake of Como. That dreaded disease called pellagra, a kind of leprosy, is not uncommonly seen here. From one third to a fourth of the lunatics in the Lombardy Asylum are suffering from it, for it induces insanity; while many cases of it, in early stages, are to be found in the hospitals.

Milan.—This city, the capital of the Lombardo-Venetian kingdom until 1859, when it was made over to Sardinia, is situated in a fertile plain between the Olena and Saveo Rivers, at an elevation of 394 feet above the Adriatic. It is indifferently sheltered from the various winds, so that the climate is cold; snow and rain are frequent during the winter; while the sudden transitions from humidity to a dry harsh air, render it an unfavourable locality for any but the strong. It is frequented by consumptives going to, or returning from the south of Italy; but the shorter their stay, the better. In 1851, official returns showed that amongst the Milanese alone, 20,000 individuals were attacked by pellagra.

Brescia, Pavia, Verona, and Mantua.—The principal towns of Lombardy, are all particularly unsuitable for invalids. Agues, fevers, and inflammations are very common. The cold in winter is intense; the atmosphere is saturated with moisture; there are dense clouds and fog; there are large quantities of rain, in the form of a fine continuous drizzle; and cold winds are very prevalent, especially the north-east.

Venice.—This city, the Queen of the Adriatic of the poets, is built on piles, in the midst of a lagoon or large marsh, two miles from the mainland of the Continent. It would seem to be slowly crumbling to decay. The climate is mild and equable; the air being impregnated with emanations of bromine and iodine. Consumption is prevalent among the inhabitants. Invalids are not attracted to Venice by the climate, however, but by its historical associations. And many sickly persons are to be found on the favourite promenade—the Piazza of St Mark. The mean temperature of winter is about 39° F., of spring 64, summer 73, and autumn 55. Drizzling rain sometimes falls for days together. The result of seven years' obser-
vation gave a mean of 51 days of snow in winter.—In Venice the dolce far niente practice is fully carried out; the climate being favourable to indolence and voluptuous ease. Contrary to what might be expected, aqva is unknown. The tranquillity which prevails over the city is not unfavourable. As the climate is sedative and lowering, it is not fit for those who are depressed by disease; and except in the early stage it is injurious to phthisical patients. It is suitable for such as have a tendency to inflammation, hemoptysis, &c. Invalids may remain here from the close of autumn to the end of spring; but it is most agreeable in the latter season.

Genoa.—This town, at the head of the Gulf of Genoa, is one of the last places for a consumptive to pass any time at. The vicissitudes of temperature are rapid, and extensive; there are sudden gusts of wind; while the biting coldness of the tramontana or north wind, alternating with the warmth and humidity of the sirocco or south-east, the two prevailing winds of Genoa, proves very trying. The best time for a visit to Genoa (not by a consumptive) is about the autumn or beginning of summer. Pneumonia, hemoptysis, consumption, and catarh, are amongst the most frequent diseases of the inhabitants.

Florence.—Situated on the Arno, a few hours' ride from Pisa, this city may be an agreeable residence for the very strong. But certainly in no part of England could a more unfavourable climate be found for consumptives. It is built in a deep ravine, almost surrounded by the Apennines, and intersected by a squalid river. It is one of the stations on the western zone of Italy where it rains the most. Extreme cold in winter, great heat in summer, chilling northerly winds, occasional fogs, violent atmospheric and thermal variations,—these are its chief peculiarities in a sanitary point of view. The nervous excitability of Florentines is explained by the topography of the city. As the birthplace of Dante and Leonardo da Vinci and Machiavelli, &c., as the scene of Savonarola's preaching and martyrdom, as well as for its churches and palaces and magnificent works of art, Florence offers many attractions to the tourist.

Pisa.—The dismal aspect of this neglected city surpasses that of any other in Italy. The dreary solitude of the streets causes gloom and melancholy; while everything seems stricken with decay or death. It is often recommended for consumptive invalids; but the climate is mainly indebted to tradition—being mild, humid, and relaxing. The sky is dull and often murky. Perhaps the high walls around Pisa assist in protecting portions of it from the cold winds, especially the Lung Arno, or that quarter where the invalids reside. The mean temperature of winter is about 45°, spring 59, summer 84, and autumn 63°. The winter is colder than at Rome. The air is moist from the great prevalence of southerly and Mediterranean winds. The climate is very depressing—causing general listlessness while it energizes the faculties. Many foreign invalids die within a few weeks of their arrival. Hemoptysis frequently sets in where there is any tendency of phthisis.

Rome.—Situated on marshy ground at the foot of a range of low hills, about fourteen miles from the sea, and divided by the Tiber into two unequal portions. Rome has not so much to recommend it to those really in search of health as many other places. The climate is mild, soft, and sedative; but malacious chillia, in a greater or less degree, are never absent. The best time in the year is October and the first ten days of November. The mean annual temperature is 60-49°; that of winter being 46-75, spring 58-28, summer 74-24, and autumn 62-75°. Owing to its exposure to cold winds, the variations in temperature are great and sudden. Northerly winds are common in the morning and evening, though in the middle of the day the wind blows from the south. The tramontana is cold and searching; but the prevalent wind is the sirocco from the south-east, which is hot, sometimes dry, and sometimes so moist as to render the streets slippery and damp. Under its influence the tissues relax, appetite fails, bowels become torpid, spirits flag, and the weakly get oppressed with lassitude and headache. If an invalid will go to Rome in the winter, let him spend as much time as he can in St. Peter's. No other public building can compare with this church as regards possessing a dry equable temperature all the year round. The mild genial air in its interior is so prized, that the sickly meet and promenade in St. Peter's when the weather will not permit of exercise in the open air.
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Dr. Buress entertains a very unfavourable opinion of the sanitary value of this city. And he points out that the popular feeling in favour of a mild and relaxing climate for consumption is altogether wrong, being based upon erroneous data, if not upon mere tradition. A cold climate, such as that of Norway or of Canada, and still air, are evidently more rational indications, if the formation of tubercle is the result of a relaxed state of the vital functions, involving impaired digestion, degraded nutrition, and degeneration of the blood. Nothing is more calculated to damage the digestive organs than the sedative influence of a malarious atmosphere. The mild climate allays bronchial irritation, at the expense of the general health and of disordered nutrition.

The most fitting localities in the city for the invalid with any bronchial irritation, chronic rheumatism, &c., are the north and west sides of the Piazza di Spagna, as having a southern exposure; or he may choose one of the streets running east and west from, and near to, the Piazza,—the Strada de' Condotti, Strada della Croce, Strada Frattina, &c., the north sides of which gain the southern sun, and all of which are on sheltered ground. The south side of the Strada del Corso should be avoided, as the Tiber frequently overflows in winter, generating low fever, &c. The Piazza del Popolo is also subject to damp fogs. In most cases the second and third floors of a house are preferable to the first; since, owing to the narrowness of the streets, they are more exposed to the sun. The higher and more exposed ground of the Monte Pincio, Via Sistina, Piazza Barberini, &c., is suitable for those with healthy chests, and who can bear a high wind.—The stay may extend from October till the end of May.

NAPLES.—The climate somewhat resembles that of Nice, but is more variable and humid. Situated on the northern shore of the Bay of Naples, on the slopes of a range of hills, near the foot of Vesuvius, this city seems to offer all that is charming to the man in health, and everything that is pernicious to the invalid. The mean annual temperature is 60° 26'; winter being 47° 65, spring 57° 95, summer 74° 36, and autumn 61° 46. Besides other winds, it is exposed to the sirocco or south-east, which is enervating to both body and mind; as well as to the mistral or north-west, which brings raw piercing cold and damp. Catarrh, pneumonia, phthisis, rheumatism, ophthalmia, uterine disease, and cutaneous affections are common amongst the inhabitants. Eustace says, and apparently with reason,—"If a man be tired of the slow lingering process of consumption, let him repair to Naples; and the dénouemen will be much more rapid." Indeed, so fatal is the climate to invalids with pulmonary disease, especially during the winter, that the proverb,—"Vedi Napoli e po' morì," may be interpreted in a more literal sense than that intended.

BAJA AND POZZUOLI.—Situated in the vicinity of Naples, these towns are recommended by M. Carrière as winter residences for invalids already sojourning in the Neapolitan territory. The air is humid and warm, and little disturbed by violent winds. But the undrained swamps in the neighbourhood of Baie, and the fatality of phthisis at Pozzuoli ought to deter any invalid from leaving England for these stations of classic renown, however anxious he might be to escape to them from Naples.

ISCHIA.—The island of Ischia, in the Mediterranean, can be reached by steamer from Naples in about three hours; or the sea passage may be much shortened by driving from Naples to Miliscola, crossing over to the small island of Procida, only two miles and a half distant, and thence to Ischia, which is separated from Procida by a channel two miles in breadth. The circumference of Ischia is rather more than twenty miles. Nearly in the centre of the island is Monte Epomeo (the Mons Epomeus of the ancients), the highest point of which is 2574 feet above the level of the sea. Bishop Berkeley seems to have been delighted with a three or four months' residence at Ischia. Thus he speaks of the island as "an epitome of the whole earth," containing within a compass of eighteen miles a wonderful variety of hills and valleys, ragged rocks and fruitful plains, barren mountains and beautiful vineyards, cornfields and orchards, natural fountains and rivulets, &c., "all thrown together in a most romantic confusion." The air in the hottest season is refreshed by cool sea breezes. The hedges are of myrtle, with the aloe and prickly pear; and there is an abundance of delicious fruit.
The baths of Ischia have been in repute for centuries. Strabo and Pliny were acquainted with the virtues of some of the waters. Their chief characteristics are the large quantities of chloride, sulphate, and carbonate of soda which they contain; combined with magnesia, lime, &c., and a large volume of carbonic acid gas. Their temperature is high: e.g., that of the Aqua del Tamburo is 210° Fahr., and that of Petrelles on the south side of the island 205° Fahr.

The principal and most picturesque village on the island is Casamicciola; which is situated on high ground behind Lacco, is sheltered on the north-west and south sides by Monte Epomeo, and is in the neighbourhood of the chief springs now in use. These springs rise in the Val Ombrasco, a ravine at the base of Monte Epomeo. The most celebrated spring is the Acqua di Gurgitello, which is used for bathing and drinking. It contains chloride of sodium, carbonate of soda, sulphuretted hydrogen, and nine cubic inches per cent. of free carbonic acid gas; while the temperature of the water is often as high as 170° Fahr. This spring is useful in cases of chronic gout and rheumatism, sciatica, serofula, nervous irritability, &c.

Near the Gurgitello is the Acqua di Capo Pietra, used for drinking only. The water, like that of Wiesbaden, has the taste of chicken broth; the temperature is 98° Fahr. Dr. A. Vans Best tells the Author, that the Italians praise this water for its good effects in renal, vesical, and uterine complaints.

Below Casamicciola is the pretty village of Lacco; in which are the hot air and sand baths of Santa Restituta e Regina Isabella. The most celebrated natural vapour bath in the island is the Stufa di S. Lorenzo; the steam for which is discharged from crevices in the lava at a temperature of 153° Fahr.

Independently of its remarkable mineral springs the climate of Ischia is delightful. The evenings are rather cold during the winter and spring months, but the air is genial throughout the day. The heat of summer is mitigated by the sea breezes, while the vines and orange trees afford a beautiful shade. A stay of some weeks on the island can be recommended in hepatic and splenic disorders, in the early stages of Bright's disease and other forms of mental mischief, as well as in gouty and rheumatic and neuralgic affections. Invalids from India might well be advised to recruit at Casamicciola.

448. The Ionian Islands.

This group of islands in the Mediterranean, off the west coast of Greece and Epirus, ceded to the Greeks by Great Britain in 1863, consists of Corfu, Cephalonia, Zante, Santa Maura, Ithaca, with many smaller islands. Their surfaces are mountainous and rugged, but in some of the larger islands, there are fertile plains. They vary but little in climate; the winters being stormy and wet with northerly winds, the springs warm, and the summers dry and hot. Intermittent and remittent fevers, dysentery and diarrhoea, phthisis and pneumonia are prevalent. As a tour for the hypochondriac a visit to these islands may be recommended.

449. Malta.

Of an area not much exceeding that of the Isle of Wight, this island forms the chief station of the British fleet in the Mediterranean, and is daily called at by ships of all nations. The atmosphere is clear and bright, the annual rainfall about 15 inches, the air mild and bracing in winter, and the temperature equable with a yearly average of about 64°. Heavy gales of wind are not very frequent, though the atmosphere is never entirely calm. The gale or north-east wind and cold in winter, and often does damage in the harbour of Valetta; while the sirocco or south-east prevails especially in August and September, is hot and humid, and produces dust which with debility.

The Rev. James Sherman, who suffered from consumption, writing from Malta on the 16th January, 1861, said, "A blazing sun shoots his rays into my room, and a delicious breeze makes it sufficiently cool. I look out on a sort of Regent Square—people traversing up and down in crowds—beautiful
garden opposite my window, with hundreds of oranges on the trees—priests, beggars, and guides jostling one another in every direction—a side view of the ocean—a deep blue sky, without a cloud—and at night the stars looking so large, near, and brilliant, that I can scarcely believe I am only 43 days from the frost and snow of England. The climate seems most delicious, and well adapted to invalids.”

The weather is most agreeable from the middle of October until the end of January. Asthma connected with chronic bronchitis, atomic dyspepsia, strumous glandular swellings, and deranged health from overwork,—these are the cases which are most likely to be benefited by a stay in the cheerful bustling capital of Valetta.

450. Egypt.

One of the earliest civilized localities of the world, this country has long been divided into the provinces of Siud or Upper Egypt, Vostani or Middle Egypt, and Bahari or Lower Egypt. Upper and middle Egypt are more healthy than the Delta. There are only two seasons in Egypt,—the temperate from October to March, and the hot from March to October. At Cairo, the capital, the climate is healthy, little variable, and remarkably dry; rain falling very rarely. The nights and early mornings during winter are cold, especially those of the last half of December and the first fortnight of January. The mean temperature of the year is 72°; that of winter being 53°, and of summer 85°. Taking the whole of Egypt the mean temperature in December, January, February, and March may be said to be about the same as that of this country in June, July, and August. Between April and June a hot wind sometimes blows from between the south and south-east. It is known as the "khamseen," because this word is the Arabic for fifty; and these winds are most prevalent during the fifty days preceding Whitsuntide. A khamseen may continue for two or three or more days; the air is rendered hazy from the sand and dust suspended in it; while the thermometer, in a sheltered spot, will often reach 110°.

The invalid should leave England rather early in October, so choosing his time of sailing by one of the Peninsular and Oriental Company’s steamers, as to be able to see the best spots on the south coasts of Spain and Portugal, Gibraltar, and Malta. This arrangement will usually be preferable to that of beginning the voyage at Marseilles. From Malta to Alexandria occupies only a few days: the traveller ought to arrive at the latter by the middle of November. Leaving this port as soon as "the Sights" are visited, he proceeds to Cairo by railway; whence he begins to ascend the Nile, so as to reach Thebes by the beginning of December. The climate of Thebes is all that the invalid or invalid can desire; and hence he may either remain there, or proceed southerly in the direction of Nubia. But, however far his trip may extend, he should be back in Cairo by the end of March; whence he may arrange his home journey, by way of Greece and Constantinople, so as to be in England by about the latter part of June.

The necessity for travelling by, and living in boats after leaving Cairo, has of course certain disadvantages, and is somewhat expensive. But with a dry balmy atmosphere, and a sky bright and cloudless, the invalid may find much that is most agreeable and exhilarating in the even progress of a Nile boat—a dahabeel. The two chief annoyances to the traveller in Egypt are the dust, and "Bakesheesh." The former may be mitigated by suitable clothing—mohair dresses for ladies, and flannel shirts with tweed suits for gentlemen; while the latter must be avoided by not exhibiting too much liberality, and by bargaining beforehand with dragenmen, guides, coalmen, boatmen, &c. The diet should be simple and unstimulating, but nourishing: light Hungarian or Bordeaux or Rhine wines are preferable to port and sherry and brandy. Bitter beer is often serviceable; but stout and porter should be avoided. Purgatives ought to be taken as seldom as possible. Cod liver oil often disagrees; while all preparations of bark are more than ordinarily apt to produce headache and hepatic derangement. The climate may especially be recommended in the early stages of tuberculosis, except in cases in which there is a dry irritable cough, in chronic bronchitis, in clergyman’s sore throat, tardy nephritis, some forms of asthma, gout and rheumatism, renal diseases, dyspepsia, and affections of the nervous system.
The city of Algiers, the capital of an extensive country of northern Africa, bordering on the Mediterranean, has been much resorted to by invalids. It can be reached easily in seven or eight days from London; by way of Folkestone, Paris, Lyons, Marseilles, and thence by steamer in forty-eight hours. About the end of October is the best time for the invalid’s arrival on the coast of Africa; the great heat having then usually ceased, and the first rains having refreshed the lands, so that the country has the appearance of spring.

Speaking of this city, Dr. Mitchell says that with difficulty, if at all, will the European traveller find a spot on earth where natural beauties so combine with those of man’s creation to please and interest him. One of the long sides of the oblong of which the “Place du Gouvernement” is formed, is open to the sea; commanding a view of the bay, the harbour, the peaks of the distant Atlas, and the verdure of the Sahel slopes. The “Place” itself is filled with a strange mixture of all races; the Arab, the Moor, the turbaned Jew of Africa, the Maltese fisherman, the Spanish fruit-seller, the veiled women of Muslem, the picturesque Jewess, the pretty Spaniard, &c. &c. The invalid will find objects of interest without seeking them, and will be gratified and amused merely by wandering in the open air. The mean annual temperature is about 66°-60° Fahr. The mean temperature for each season is—winter, 50°-51°; spring, 67-60; summer, 77-75; and autumn, 63-60. The rainfall is 36 inches: rainy days, 96. Winter fogs are rare. Snow has fallen once in seven years. Compared with other points on the Mediterranean, Algiers has a warmer and a less varying climate than Marseilles, Nice, Genoa, and Naples; while it more nearly approaches, but is still superior to Malta, Corfu, and Gibraltar. Dr. Mitchell quotes the opinions of M. Ohrulz, which are to the following effect:—1st. The climate of Algiers is opposed to the generation as well as to the evolution of tubercle in the lungs. 2nd. This morbid production is observed but very exceptionally among the indigenous population. 3rd. Europeans who do not bring the germ of the disease to Algiers, almost never become pulmonary: 4th. Those who do bring not only a predisposition, but actually crude tubercle, in greater or less quantity, in the lung, are often cured; or, in the worst cases, the progress is extremely slow: 5th. When the tubercle has softened, the climate is no longer favourable, but the reverse.

The climate is also beneficial in laryngeal and bronchial affections; in chronic heart disease; in gout and rheumatism; and in renal disorders. Nervous complaints, paralysis, epilepsy, and convulsions are aggravated by it. Cerebral congestions, gastric and hepatic disturbances, and a plethoric condition of the uterine organs, appear to be common in Algiers.

Tangiers possesses a climate equal to that of Algiers, and is gradually becoming available as a winter residence for invalids.

452. The Azores—Madeira—Canaries.

The Azores or Western Isles. This group of nine islands belonging to Portugal, lies in the midst of the Atlantic Ocean. They are of volcanic origin, all possess similar features, and all have mild equable climates. The atmosphere is saturated with moisture. A winter trip to the Azores may be recommended where a soothing relaxing climate is needed. Hence it is beneficial in inflammatory dyspepsia, bronchial irritation with scanty secretion, and in the premonitory stage of consumption. Sir James Clark thinks that a change from the Azores to Madeira, and from thence to Teneriffe, would in many cases prove more beneficial than a residence during the whole winter in any one of these islands.

Madeira.—Of the group of Madeira Isles, the largest and most important is Madeira, about 120 miles in circumference. Funchal, its capital, has long enjoyed great reputation as a winter residence for the phthisical. It is almost certain that this reputation is now undeserved. Where the disease is advanced and the irritable lungs are soothed by a humid heat, some of the distressing symptoms of phthisis are alleviated by a stay at Funchal; but such relief does not stay the increase
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and degeneration of tubercle, the invalid who leaves this country about the middle of October, can reach Madeira in from ten to fourteen days; where he will find himself in a tropical climate, with an unclouded sky, a glowing sun, a deep blue sea, a luxuriant and varied foliage, and beautiful hills which were covered with flourishing vineyards. Since the autumn of 1852, however, when the vine disease suddenly broke out, there has been a sad change; the plants still being destroyed by the deadly fungus.—The return voyage should be undertaken about the beginning of June.

The climate of Madeira is mild, equable, and moist. There are occasional storms of wind and rain, and fires are often necessary in the mornings and evenings. The mean annual temperature is 64·9°; that for winter being 60·6, spring 62·3, summer 68·5, and autumn 67·3. The annual rainfall is 29·23 inches; the days on which there is wet being about 70, whereas in London they number 178. The most injurious wind is the hot parching west, from the east-south-east; which is often charged with a fine dust, very irritating to the air passages.

The invalid who cannot bear a dry and irritating climate, but needs a mild and soft and relaxing atmosphere, will obtain it here. Laryngitis, bronchial, and pulmonary diseases are soothed; and benefit may be derived by a few patients threatened with consumption, provided their symptoms are marked by irritability and an excess of vascular action. Hypochondriacal and rheumatic and neuralgic patients ought especially to avoid Madeira. Should the invalid wish to spend a second winter in Madeira before returning home, a voyage may be taken to Teneriffe in June, and the stay prolonged there until the end of October.

THE CANARY ISLANDS.—This group (Fortunate Insulae) consists of seven principal islands, and several islets. The climate differs from that of the foregoing in being warmer, drier, and less relaxing. At Santa Cruz, the capital of Teneriffe (the only island possessing good accommodation for the valetudinarian), the mean annual temperature is 70·45°; that for winter being 64·85, spring 69·87, summer 76·98, and autumn 74·17.—Orotava and Laguna are sometimes preferred to Santa Cruz.


THE CAPE OF GOOD HOPE.—The climate is mild and healthy but very dry. The seasons are the reverse of those in Europe; December and January being the warmest, while June and July are the coldest months. The mean temperature for the winter months of 1858, at Cape Town, was 57° Fahr. The prevalent diseases appear to be rheumatism and dysentery. Invalids from India are often benefited by spending a season at the Cape or at Natal.

NATAL.—This British Colony lies on the south-eastern border of Africa, about 800 miles from the Cape of Good Hope. There may be said to be only two seasons—the summer from October to March, and the winter from the beginning of April to the end of September. Even in the latter, during the coldest months of 1858, the temperature was occasionally 78° Fahr. in the neighbourhood of Maritzburgh; while in the hottest months it was occasionally below 60°. (The Colony of Natal. By Robert J. Mann, M.D., p. 48, London, 1860.) Notwithstanding its almost-tropical position, and the frequent vicissitudes of temperature, Natal is very healthy. Dr. Mann remarks that while 490 soldiers die yearly out of every 1000 stationed at Sierra Leone, 121 in 1000 at Jamaica, 78 in 1000 at the West Indies generally, 48 in 1000 in the Madras Presidency, 28 in 1000 at Bermuda, 27 in 1000 in the Mauritius, 25 in 1000 at St. Helena, 21 in 1000 at Gibraltar, 16 in 1000 at Malta and Canada, and 14 in every 1000 in Nova Scotia and New Brunswick,—only 13 in 1000 die yearly in the western districts of the Cape Colony, and only 9 in 1000 in the eastern district. During the Kaffir war in 1835, not a single officer or man was invalided during the five months of active service. Newly arrived settlers in Natal, remain for months under canvas, without the slightest injury.

Canada.—This British Colony of North America is divided by the Ottawa river into the provinces of Upper or West Canada (chief city, Toronto) and Lower or East Canada (chief city, Quebec). The climate is marked by extremes, the winters being excessively cold, while the summers are just as hot. The coldness of the winter is mitigated, however, by the dryness of the air and the absence of high winds; while the way in which the Canadian protects himself with thick furs, and his house by well managed stoves, enables him to set the frost at defiance. A gentleman, resident in Canada for six years, told the Author that with the thermometer—20° he never felt the cold so raw and unpleasant, as in London at the beginning of January, 1864.—The climate is also much milder in Upper than Lower Canada; but that of both provinces is healthy and conducive to longevity.

New Brunswick.—The climate of this portion of British North America resembles that of Canada; the winters being very severe and the summers excessively hot. The winter, however, is mitigated by the length and fineness of the autumn,—the "Indian summer."

Nova Scotia.—This peninsula of North America, forming part of the British colonial territory, is separated from New Brunswick by an isthmus 14 miles across. The climate is remarkable for vicissitudes of temperature, prolonged falls of rain, and occasional fogs. The inhabitants, nevertheless, are said to enjoy a remarkable degree of health.

Newfoundland.—This island, lying off the coast of Labrador, is separated from the mainland by the Strait of Belleisle, which is 12 miles across. The surface of the island is mostly marshy, and the soil unfavourable to cultivation. The winters are less severe than in Upper Canada, but the summers are shorter. Dense fogs prevail along its banks, sometimes for the greater part of the summer. The annual mortality, however, scarcely exceeds 12 per 1000 of the population, so that the climate must be favourable to the constitution.

455. West Indian Islands.

Invalids should not be sent to any of these islands; for though they are not as unhealthy as was formerly supposed, yet severe fevers and inflammatory diseases are common and run a rapid course. Moreover, the returns show that nearly twice as many cases of consumption originate among our troops stationed here, as at home. If a man in search of health will visit them, however, he must only do so between the months of December and April, after the heavy autumnal rains. Jamaica, the chief of the British possessions, is reputed the most healthy. The Bahamas are resorted to by American invalids. In the Bermudas and in Barbados, dysentery, rheumatism, and yellow fever are the prevailing diseases.

456. Hill and Marine Sanitariums in India.

The Indian hill stations offer a climate which is of great use to convalescents from fever, invalids from local cachexia, &c.; and which exerts a powerful influence in maintaining the health and vigour of Europeans—especially of such as have not been very long in India.

According to Dr. W. J. Moore, of the Bombay Medical Service, the climate of the hill ranges differs from that of the plains in having a mean temperature some 10° to 15° cooler, in being above the influence of the hot winds, and in being more humid during the monsoon season. Various localities differ in minor points; in the Himalayas, a greater elevation will procure a colder climate; the fall of rain has sometimes been excessive at Makobalchaur, at Neys Tel, &c.; while at many of the hill stations sanitary laws are still too much disregarded, and too little care is taken to protect the system from the inclemencies of the weather.
The climate of the hill stations in the Himalayas, of Mount Abu, of Ootacamund, Bangalore, &c., as well as of Matheran and Mahableshwar in Bombay, is of great service to the European whose health has deteriorated from a residence on the Indian plains. The air invigorates both mind and body. But it is unsuitable where there is structural disease of any internal organ; diarrhoea and dysentery being increased by it, while affections of the brain and lungs and liver are much aggravated. Cholera, dysentery, and malarious fevers are less prevalent and fatal in the hill stations than in the plains below. Yet these affections are met with at high elevations; as are also cases of hepatitis, tuberculosis, typhus, croup, diptheria, small-pox, rheumatism, neuralgia, severe catarh, and hill-diarrhoea. It has been well suggested that European troops should be located more on the hills and less on the plains than is now the case; not waiting until they are weakened by disease, climate, and service to be sent to these more temperate and less malarious regions.

Many of the diseases which are aggravated by the hill stations of India, are much benefited by the greater purity and uniformity of the sea climates. The invalid who has been prostrated by the harsh parching winds of the interior, not only has his bodily sufferings greatly ameliorated by the moist fresh breeze from the sea, but the mere sight of the ocean raises his powers by giving him hope and confidence. It is necessary to select an open spot, with high cliffs and a rocky shore; low, flat, sandy coasts being generally unhealthy in the tropics. The proximity of the island of Martaban to Madras and Calcutta, as well as its geological characteristics, have led Dr. MacPherson to recommend it as a marine sanitarium.

The weak-chested, and those persons of a strumous habit predisposed to phthisis, are often greatly benefited by a residence in India; but where tubercle is deposited in the lungs, the climate seems to accelerate the progress of the disease. Individuals of a pugilistic temperament who have more or less difficulty in digesting their food, and who possess a languid circulation, often improve very much in this country.

457. Australia—Tasmania—New Zealand.

Australasia.—The immense extent of territory known as Australia, in the South Pacific Ocean possesses a temperate climate which appears very favourable to the European constitution. In speaking of this antipodal region it is necessary to remember that the meteorological phenomena are generally the reverse of those experienced in this country. Thus the months of December, January, and February correspond to our summer, and have a mean temperature of about 80°; while those of June, July, and August constitute the winter, the thermometer marking on an average 46° in an exposed situation.

In May, 1836, the number of settlers in the district of Victoria (formerly Port Phillip), was 177. At the end of a quarter of a century (April, 1861), the amount had increased to 540,332. The total area of Victoria (26,831 miles) is nearly as large as that of England, Scotland, and Wales united. Melbourne, the capital of Victoria, is the most prosperous commercial city of the southern world. The mean annual temperature is 57°; extreme cold in winter, and excessive heat in summer (except nine or ten times in the season, under the influence of hot winds), being unknown. Although the annual rainfall is 26 inches (that for London being 2116), yet the average number of wet days is much less than in Great Britain; for in Melbourne the rain falls with great violence, but it only lasts a few hours, and then the sky clears. A continuance of cloudy weather is unknown. There is a genial sun; with a pure, dry, stimulating air.

Dr. S. Dougan Bird says (Australian Climates, and their Influence in Pulmonary Consumption, p. 41, London, 1863), that the main characteristics of the Victorian climate are these:—It is a temperate warm climate, whose average summer heat is but two or three degrees above that of London; while in winter it is warmer than Nice or Naples, and as warm as Valencia or Barcelona; and actual cold is never felt at, or near, the sea level. The air is generally dry, always stimulating and ozoniferous; but so tempered by the prevalence of ocean winds, that it is prevented from becoming irritating, like that of Nice or Provence. With this there is a very large proportion of sunny cheerful weather during the whole year. In no climate with which I am acquainted is there so much pleasant weather
during the year as in Victoria—so many unclouded days, when it is neither too hot nor too cold—and an invalid has, consequently, every temptation to be in the open air.”

Tuberculosis (i.e., scrofula, phthisis, tabes mesenterica, and tubercular meningitis) is rare in Victoria, the mortality not being one-fourth of that in Great Britain from the same cause. Yet the population is composed of those who, hereditarily, from occupation and mode of living (except that animal food is much cheaper), are as much predisposed to consumption as the inhabitants of London or Liverpool. It should be added that these statements have been controverted, and that phthisis has been shown to be more common than is here allowed, but there can be no doubt that the climate is exceptionally healthy.

At Sydney (the capital of New South Wales, East Australia) the mean annual temperature is about 65°. Heavy rains fall between June and September. Disease is said to assume a milder form here than in European countries. Dysentery and pulmonary affections are, however, not uncommon. The winters are colder than at Moreton Bay, though this season is very salubrious and agreeable.

Moreton Bay (Queensland, East Australia) has a fine winter climate which proves very useful in advanced cases of phthisis, when combined with irritability of the system and a tendency to bronchial inflammation. The average temperature on the coast during the cold months is 62° or 63; the air being soft and sedative, and the weather brilliant and sunny. A few miles inland the ground rises, and the air is more dry and bracing.

In cases of consumption with copious expectoration, and in the chronic bronchitis of old people, Adelaide, the chief city of South Australia, may be chosen as a residence. The air is dry, warm, and tonic; the winter temperature averaging 53°.

The invalid leaving England for Australia, will generally find the long uninterrupted voyage round the Cape of Good Hope, in a comfortable ship, much to be preferred to the more exciting and fatiguing “overland route,” by way of Suez and Gall. The best time for leaving this country is from the middle of October to the end of November; when the new home will be reached in about 90 days from Liverpool. Thus supposing the traveller to arrive about the end of January he will find a pale-blue cloudless sky, and the thermometer at 40° in the middle of the day without any unpleasant sense of heat. With a feeling of new life, general exhilaration, and a good appetite, he will experience a desire to be at work. The difficulty seems to be to persuade the phthisical that they are not cured; and that the general rules of hygiene must be adopted, and all excesses avoided, to prevent the pulmonary mischief again starting into activity, or to escape hepatic congestion, or that he may obtain and retain health and vigour.

Tasmania.—This island (known as Van Diemen’s Land) until the abandonment of transportation in 1853) is separated from the southernmost point of Australia by Bass’s Strait. The chief towns are Hobart Town in the south, and Launceston in the north; the climate of both being salubrious and delightful, and highly conducive to longevity. The latter port is reached in twenty-four hours, by steamer from Melbourne, and is beneficial to such cases as are usually sent to Pau. Air is moist, sedative, and equable. In the winter months of June, July, and there is never great cold during the year. The mean annual temperature Town is 52°. Tasmania is described as “the Garden of Australia.”

New Zealand.—This group in the South Pacific Ocean, consists of principal (the North and Middle) and several smaller islands. The chief settlements are Auckland, New Plymouth, or Taranaki, Hawkes Bay, and Whanganui in the North Island; with Nelson, Marlborough, Canterbury, and Otago in the Island. The temperature of New Zealand is marked by its uniformity. The of the warmest month at Auckland is 68°, and of the coldest at Otago 42°, climate, which in general terms may be described as mild and soft, appears favourable to the European constitution.
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XXI. MINERAL WATERS.

458. General Observations.

Mineral waters have been used in medical practice since the days when Esculapius was worshipped throughout Greece, and when his temples were erected in healthy places, near wells which were believed to have healing powers. Like many other important remedies their virtues have been regarded with singular scepticism at one time, and with blind credulity at another. The practitioner in the present day wisely attempts to keep the middle course: neither over-estimating, nor unduly deprecating, the value of these agents in subduing disease.

A mineral water is merely a complicated medicine, containing various salts and gases blended together. The ingredients are generally derived from the soil or rocks through which the waters pass; and they consist especially of chloride of sodium, sulphate and carbonate of soda, sulphate and carbonate of magnesia, some salt of iron, carbonate of iron, bromine and iodine, organic matters (biuretine), and more or less of a free gas (sulphuretted hydrogen, carbonic acid, nitrogen, or oxygen). The cause of the temperature of hot springs is a mystery; and philosophers know not whether it is due to the internal heat of the globe, to electricity, to chemical decomposition, or to volcanic agency. The heat is generally much under that of boiling water, and in most springs it is found to have varied but little during a long succession of years. The only waters which have a temperature as high as 212° Fahr. are the geysers or hot springs of Iceland.

Mineral waters are administered internally and applied externally. They act chiefly by diluting and purifying the blood; increasing the processes of secretion and excretion, so that morbid matters are eliminated from the system. They likewise stimulate the cutaneous and visceral circulation. It cannot be doubted that these effects are in some measure due to the chemical composition and temperature of the waters; though it is allowed on all hands that the beneficial influence is largely aided by the locality of the spring, the nature of the climate, the absence of business and care, the diet, and the general regimen.

Mineral waters are useful only in chronic disorders, where there is but little, if any, structural change; or in cases where disease is threatened. Hence the sufferers sent to the Spas are for the most part affected with skin affections, strumous and other rebellious ulcers, stiffness of joints and limbs from old sprains, &c.; chronic gout, rheumatism, sciatica, or neuralgia; gastric, hepatic, or renal disorders; sluggish action of the intestines, particularly of the colon and rectum; paralytic affections, where all active disease has been subdued; hysteria or hypochondriasis; or with certain functional disorders of the uterine system. Nothing but mischief can arise where there is either acute disease, tuberculosis, cancer, fatty degeneration of any important structure, aneurism, or mischief about the heart or large vessels. Where there is any predisposition to cerebral, pulmonary, gastric, or intestinal hemorrhage all thermal mineral waters (especially in the form of baths) are contra-indicated. The young and the very aged, moreover, will derive little or no benefit: and in pregnancy the use of the springs, to say the least, demands great caution.

The time for residing at some of the Spas is from the beginning of May until about the close of September; but at several of the foreign ones it is only from June until the end of August. At a few of the hot springs, invalids (chiefly the gouty) remain through the winter. The treatment, however, is not commonly to be prolonged beyond six or eight weeks; and often three or four will suffice. The invalid should not be led to expect immediate relief. And he should be cautioned against the popular idea that the benefit derived will be in proportion to the quantity of water taken; while it may be as well to let him know that "critical eruptions" (psyaracia thermalis), and "critical fluxes" are neither necessary nor advantageous. As a rule, bathing and drinking ought not to be commenced on the same day; and at first only a moderate quantity of the water should be taken,—two or three of the ordinary glasses before breakfast, and one or two in the evening. After a time, a glassful may also be taken before dinner. Very hot water is to be cooled, and very cold to be warmed, before drinking.
When the strength will permit of it, early rising (at about 6 o'clock) is to be recommended, so that the doses may be taken before breakfast. The contents of the tumbler are to be sipped slowly and methodically, not hastily swallowed like a nauseous draught; and an interval of 15 minutes, at least, should be allowed between each glass, which time may well be spent in a short walk. An hour after the last glass, a light breakfast is to be taken. Then a gentle saunter, the bath, reading, writing letters, &c., will agreeably occupy the hours till the early dinner; at which fruit and raw vegetables had better be avoided, while a moderate quantity of light wine, or of mild bitter beer can be permitted. An excursion to the objects of interest in the neighbourhood, perhaps one or two more glasses of water—never more than half the quantity taken in the morning, a light supper at 8 o'clock, and bed two hours afterwards will complete the day’s work.

Mineral waters are sometimes classified into the thermal or hot, and the cold springs. But a more useful division is into chalybeate, sulphurous, gaseous or acidulous, saline, iodo-bromated, and muriated lithia waters.

Class 1. Chalybeate or Ferruginous Waters.—A large number of waters contain small quantities of iron, but none are considered as belonging to this class unless the proportion of metals is considerable. The chief acidulous chalybeates (those which contain much carbonic acid gas) are the waters of Schwabach, Spa, Pyrmont, Brückman, the Cambray well at Cheltenham, and Turnbridge Wells. The principal saline acidulous chalybeates (such as, in addition to iron and carbonic acid, have a certain amount of sulphate and carbonate of soda, with chloride of sodium) are the springs of Frazenabad, Bocklet, Harrogate, &c.—Chalybeate waters are useful in anaemia, and in functional disorders of the generative organs.

Class 2. Sulphurous Waters.—They have the odour of rotten eggs owing to their impregnation with sulphuretted hydrogen. The chief sulphurous thermals are those of Aix-la-Chapelle, Baden near Vienna, Aix-les-bains, Barbeyges, Bagneres de Luchon, St. Sauveur, Cauterets, Eaux-Bonnes, and Eaux-Chaudes: the higher the temperature, the more stimulating the effect of the water on the nervous and vascular and cutaneous systems. Amongst the cold sulphurous springs may be mentioned Harrogate and Bocklet.—Sulphurous waters are recommended in cutaneous, hepatic, uterine, rheumatic, gouty, neuralgic, and old constitutional syphilitic diseases. In chronic poisoning by mercury, lead, or copper they help to eliminate the injurious mineral. The excretion of carbonic acid by the lungs and skin, as well as of urea and uric acid by the kidneys, is probably increased by these waters.

Class 3. Gaseous or Acidulous Waters.—The carbonic acid gas gives these waters a sharp acidulous taste, with a sparkling appearance. The most important are the thermal springs of Vielcy, and the cold of Tachingen and Bilin. The refreshing and exhilarating waters of this class are recommended in dyspepsia, hepatic derangement, gout and rheumatism, &c.

Class 4. Saline Waters.—Those which are purgative and have sulphate of soda or sulphate of magnesia as their chief ingredients, are Epsom, Cheltenham, Lancing, Seidlitz, Püllna, Carlsbad, and Marienbad. They are useful in habitual constipation, torpidity of the liver, inactivity of the abdominal viscera generally, chronic rheumatism, sciatica, and perhaps in diabetes (Carlsbad especially). Those saline waters which have chloride of sodium as their characteristic ingredient, are Wiesbaden, Baden-Baden, Homburg, Kissingen, &c. They are employed in cases of scrofula, rheumatism, dyspepsia from overwork, and irregularity of the bowels. The sulphate or carbonate of lime, or both, predominate in the thermal waters of Bath and Buxton; while the carbonate or bicarbonate of soda is the characteristic ingredient of the thermal springs at Eins, Teplitz, &c.

Class 5. Iodo-bromated Waters.—The springs at Kreuznach are the most celebrated of this class; while in England there is the Woodhall spa. The waters are used in all forms of scrofula, in many chronic skin diseases, in uterine tumours, and in standing constitutional syphilis.

Class 6. Muriated Lithia Waters.—The springs of Baden-Baden have considerable reputation for the cure of gout and the uric acid diathesis, owing to the chloride of lithium which they contain.
459. Tunbridge Wells, in Kent and Sussex.

This town is more visited on account of its dry bracing air, beautiful varied scenery, and fine walks, than for its chalybeate spa. The water of the latter has a temperature of 50°, is feebly ferruginous to the taste, contains about a quarter of a grain of oxide of iron to the pint, and has just sufficient carbonic acid to hold the metal in solution. Frequently increased doses of steel are given with the water; or sulphate of magnesia may be added, if an aperient be needed. The chief value of the spring is witnessed in cases of anaemia and chlorosis, debility inducing dyspepsia, and in general lassitude from a too sedentary mode of life.

460. Bath, in Somersetshire.

The thermal mineral springs, situated in the southern part of the town, near the Abbey church, are few in number. The temperature of the waters varies from 120° Fahr. to 104°. Speaking generally the solid contents are about ten grains to the pint. The chief constituents are sulphate of lime, sulphate of soda, chloride of soda, chloride of magnesia, carbonate of lime, silice acid, and a comparatively small portion of iron. The gases evolved consist of nitrogen in large quantity, with oxygen and carbonic acid.

The sparkling appearance of the waters at the springs is due to the carbonic acid they contain. The quantity generally drunk is from one quarter to one pint, before breakfast and again in the afternoon. Taken quietly and leisurely the effect is usually to raise the temperature of the body, to quicken the circulation, to increase the appetite, and to promote the salivary and renal secretions. When headache, loss of appetite, thirst, nausea, mental depression, and a diminished flow of urine follow their use, they should either be discontinued or taken in very small doses.

The accommodation for bathing is excellent; there being good douche, shower, vapour, reclining, swimming, and chair baths. By the latter, worked with a crane, a helpless invalid is lowered into, and raised from, the water. The bath is to be taken three or four times a week, not too near the meal times, and the patient should remain in it from ten to thirty minutes. The proper temperature is 96° to 98° Fahr.

The spring and autumn are the best seasons for taking the baths and waters, though they may be advantageously employed in the winter. And the diseases which are most benefited by them are: subacute gout, chronic rheumatism, sciatica, neuralgia, lumbago, rheumatoid arthritis, contracted or rigid joints, dyspepsia, paralysis from rheumatism or metallic poisoning, leucorrhoea, chorea, anaemia, lypra, eczema, and psoriasis.

461. Cheltenham, in Gloucestershire.

Since the cure of George the Third by the waters of the Royal Old Wells, this Spa has been a fashionable resort. Situated 8 miles E.N.E. of Gloucester, 11 by the Cotswold and other hills from the north and east winds. The season lasts from about the middle of April to the beginning of October.

The waters are chiefly taken internally. There are several cold springs, all of them powerfully saline except the Cambray Chalybeate. The waters of the Royal Old Wells contain chiefly chloride of soda, chloride of calcium, chloride of magnesia, and sulphate of soda. They are but slightly gaseous. Some of the wells of the Montpellier Spa have, in addition to the foregoing, a little oxide of iron, and iodurated magnesium saline salts. There is an unusual amount of silica in the Pittville saline; while the Cambray spring is strongly chalybeate. The Montpellier baths have accommodation for warm and cold bathing, swimming, medicated air, and vapour douches, &c.

These springs enjoy considerable reputation for relieving the diseases engendered by a residence in tropical climates, and hence many old Indians with liver affections resort to them. They are also useful in gouty and rheumatic disorders,
in the lithic diathesis, in plethoric and irritable systems, in skin diseases, in dyspepsia with torpidity of the bowels, as well as in some forms of amenorrhoea and chlorosis. The dose is usually from half a pint to one pint before breakfast; it is better to take the water pure, without the addition of any "solution" of the crystallized salts; and it may be warmed if a more than ordinary specific effect is needed. The spring to be recommended must depend upon whether a simply astringent, or an astringent and tonic remedy be indicated.

462. Purton and Melksham, in Wiltshire.

The healthy village of Purton in North Wilts, 4½ miles N.W. of Swindon, has a dry bracing air. The Spa is 2½ miles from the village, in a field known as Salt's Hole, where a pump-room has recently (1859) been erected for the accommodation of visitors. An analysis of the water shows that it is rich in sulphate of soda, sulphate of magnesia, sulphate of lime, carbonate of potash, and chloride of sodium. There are also small quantities of sulphate of potash, silicate, iodide of sodium, and bromide of magnesium; with traces of iron, phosphoric acid, and sulphured hydrogen. There is a large amount of free carbonic acid gas; and the temperature is 58°-59°.

The Purton sulphated and bromo-iodated saline water can be recommended where an astringent stimulant is needed. It seems to have been useful in strumous sores and enlarged glands, threatened consumption, stomach and liver disorders, gouty and rheumatic affections, obstinate skin diseases, as well as in some functional derangements of the uterine system. The dose is from half a pint to a pint before breakfast, with half a pint in the evening.

The small town of Melksham lies 10 miles E.S.E. of Bath, in a fine open country. In its vicinity are baths and a pump-room erected over the chalybeate and saline springs. The chief constituents of the waters are the salts of lime and magnesia, with smaller portions of soda and iron; and they are artificially charged with gas for exportation. In strumous, rheumatic, and cutaneous diseases, the medicated vapour and douche baths may be employed simultaneously with the internal use of the waters.

463. Leamington, in Warwickshire.

Being less protected by hills than Cheltenham, the town of Leamington, 2½ miles E. of Warwick, has a lower temperature. The climate, however, is genial and bracing, but humid; while it is agreeable and healthy to the flagging invalid during the autumn and winter months.

The springs all lie near the banks of the Leam; their principal salts being—chloride of soda, sulphate of soda, chloride of calcium, and chloride of magnesium. The chief gas is carbonic acid, with great quantities of nitrogen and oxygen. The most ancient and most used of the springs is the OLD WELL. The water at GOOLD'S SPRING AND BATHS contains more chloride of sodium, while CURTIS'S WELL has more chlorate of magnesium than the others. The VICTORIA WELL AND PUMP-ROOM possesses a weak sulphurous and a saline chalybeate spring; and so does LEE'S WELL.

The temperature of the Leamington waters is about 46° Fahr.; and their action is astringent and alterative. They are suitable for the same class of cases as is sent to the Cheltenham springs; but being more active they agree better with invalids of a torpid habit, than with those of a susceptible irritable temperament.
The Buxton waters issue abundantly from several crevices in the limestone rock at a temperature of 12° Fahr. The chief saline salts in them are, carbonate of lime, carbonate of magnesia, chloride of sodium and potassium, with silica, carbonate of protoxide of iron, and traces of fluoride of calcium and phosphorate of lime: though so small is the quantity, that in the whole, they only amount to 18.434 grains in the imperial gallon. In the same amount of water Dr. Playfair found (1852) free carbonic acid, in weight 704.2 grains, nitrogen gas 206 cubic inches, and carbonic acid gas 15.86 cubic inches. According to the most recent analysis by Dr. Sheridan Muspratt (1860) the quantity of nitrogen gas, at the moment of issue, is no less than 504 cubic inches per gallon.—As these waters, minus their gases, have only the composition of ordinary spring water, their stimulating effects are generally attributed to the nitrogen. They are, however, chiefly used externally; the accommodation for plunge, swimming, and douche baths being excellent. The good which results from the latter is most marked in cases of gout and rheumatism, in severe sprains and old muscular contractions, as well as in cases where it is wished to stimulate the vascular or nervous or digestive systems.

A pleasant drive from Buxton is the picturesque village of Matlock, built on the slope of a hill, at the base of which flows the Derwent. It is an agreeable summer residence, and its springs supply large tepid baths. The water, however, has no medicinal properties, though the guidebooks usually describe Matlock as a valuable Spa.

465. Woodhall, in Lincolnshire.

This strong saline spring arises in a plain 3 miles W.S.W. of Horncastle, and contains more iodine and bromine than any other English water. It has also 189 grains of chloride of sodium in the pint, with a little chloride of calcium and magnesium, bicarbonate of soda, and sulphate of soda. The temperature is 35°. The water is chiefly used externally in rheumatic and cutaneous affections, and in scrofula. Taken internally half a pint acts as a mild aperient.

466. Harrogate, in Yorkshire.

High and Low Harrogate, half a mile distant from each other, and 27 miles W. of York, are filled with visitors during the season,—from June until the middle of October. The air is pure and bracing, but somewhat humid. The soil is sandy, so that the walks are soon dry even after heavy rain. Low Harrogate is the most sheltered. The most elevated part of High Harrogate is 596 feet above the sea.

There are upwards of fifty different springs, some of which have been in repute since the end of the 17th century. The waters are all cold, being generally warmed artificially before they are drunk. Dr. Kennion divides the springs into four distinct groups:—(1) The strong sulphurous waters. (2) The mild sulphurous waters with alkaline impregnations. (3) The saline chalybeate waters. And (4) The pure chalybeate waters.

1. Strong Sulphurous Springs.—As types of this class may be mentioned the old Sulphur Well in the Royal Pump Room, and the strong Montpellier Sulphur Well in the Montpellier Gardens. They are both impregnated with sulphuretted hydrogen gas (upwards of 25 cubic inches in the gallon); their chief salts being chlorides of sodium and calcium and potassium and magnesium; sulphide of sodium and carbonate of lime, with traces of bromide of sodium, iodide of sodium, &c. The waters are alterative, aperient, stimulant, and diuretic: they are taken internally, and used as baths. The dose varies from half a pint to a pint and a half, in three or four divided quantities before breakfast.

2. Mild Sulphurous Springs with Alkaline Impregnations.—The two most important are the Mild Montpellier Well, and the spring at the Victoria Gardens. They contain much less sulphuretted hydrogen, less chloride of sodium, and less chloride of magnesium than those of the preceding group; but they have in addition carbonate of magnesia. They are antacid, alterative, diuretic and deobstructive; and are used externally as well as internally.

3. Saline Chalybeate Waters.—One of these springs is in the Cheltenham Pump Room, the other in the Montpellier Gardens. In addition to the salts already mentioned they contain carbonate of iron, so that they have a tonic action superadded to their other properties.
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4. Pure Chalybeate Waters.—The springs of the Tewit and St. John's Well, have almost the composition of pure water, with the addition of a small quantity of carbonate of iron.

Invalids with all forms of chronic disease visit Harrogate to drink the waters. But the cases most likely to derive benefit are the following:—Imperfect digestion in men too fond of good living, where the bowels and liver are inactive; habitual constipation; obesity; indurations and chronic swellings of the glands, joints, &c. (the strong sulphur springs): chronic skin diseases, such as eczema, lepra, impetigo, acne, pityriasis, lichen, &c. (the sulphur, beginning with the mild): gouty and rheumatic affections (the strong sulphur): threatened phthisis, especially in young women with disordered menstruation (the mild sulphur, alternately with pure chalybeate): strumous affections (the saline chalybeate); and lupos, constitutional syphilis, chronic ulcers, &c. Very frequently great advantage is derived from the external use of the strong sulphur waters, combined with the internal administration of the chalybeate.

467. Spa, in Belgium.

Situated near the frontier of Rhenish Prussia, in the beautiful valley of the Ardennes, at the foot of a steep mountain sheltering it from the north winds, is Spa. It possesses the only important mineral springs found in Belgium. The waters of the principal well—the Pouhon—have a temperature of 50° Fahr., and are largely charged with carbonic acid; the chief solid constituents being the bicarbonates of soda, iron, lime, and magnesia. Spa is rather more than 1000 feet above the sea level.

The wells of the Sauvenibre, Grosebeck, Geronneste, and the three Tonnelets are situated at short distances from the town. Their waters are similar to those of the Pouhon, but the proportion of iron is smaller. The Tonnelet springs are the most gaseous. The water of the last discovered spring, the Barisart, has a temperature of 52°, contains more carbonic acid than the Pouhon, and less iron. It sometimes proves useful where the Pouhon disagrees. This spring is much frequented.

These gaseous chalybeate waters are employed, to the extent of two or three pints daily, commencing with a couple of glasses before breakfast. They impart power, strengthen the digestion, and are valuable in such cachectic and other diseases as require a ferruginous tonic. The season is from the commencement of May until the end of September. During the early part of October the weather is often wet and cold.

Chaudfontaine, in the valley of the Vesdre, has a thermal mineral spring which is used for bathing by sufferers from chronic rheumatism, neuralgia, irritability of the nervous system, &c. The temperature of the water is 92° Fahr. The solid contents are scarcely more than two grains in the pint, and consist of chloride of sodium and carbonate of lime. The surrounding country is very pretty; while there is much to be seen of great interest in the neighbouring manufacturing town of Liege—five miles distant.

468. Bagneres de Bigorres, in the Pyrenees.

This celebrated watering-place (1850 feet above the sea) is situated at the foot of the Pyrenees, on the left bank of the Adour, about 35 miles to the south-east of Pau. The season commences in June and ends about the middle of October.

The springs in Bagneres and its neighbourhood are numerous, and may be divided into three classes:—1. The Saline. The temperature of these waters varies from 124° to 95° Fahr.; the chief chemical products found in them being carbonic acid, chlorides of magnesium and sodium, sulphates of lime and soda, and magnesia, subcarbonates of lime and magnesia and iron, an infinitesimal proportion of arsenie, with resinous and vegetable extractive matter, and silex. 2. The Ferruginous. There is only one spring of this kind, properly so called—la Fontaine Ferruginous. 3. The Sulphurous. Only one sulphurous spring has much reputation—that of Labastide; and its waters contain a minute quantity of carbonic acid, hydroaearbic acid, chlorides of sodium, hydrosulphate of soda, subcarbonate of soda, vegeto-animal matter, and silex.
The general effect of the waters, taken internally and used as baths, is that of a stimulant to the mucous membranes, kidneys, lymphatic system, and skin. They are useful, more particularly, in diseases of the bones and articulations; in chronic rheumatism, and allied disorders, as neuralgia, sciatica, &c., in atonic dyspepsia from over mental work; and in nervous affections.—Hysteria, palpitations, hypochondriasis, gastrodynia, &c., especially if there be biliary derangements. The Labastère waters are beneficial in cases of excessive secretion from the mucous canals, in many skin diseases and in some morbid states of the abdominal viscera. In anemic conditions, valuable effects result from the employment of the ferruginous spring.—Patients who have been benefited by Pau during the winter may advantageously proceed to Bagnerès for the summer.

When the saline waters are taken for their alternative effects, the daily dose is small,—about a pint; but if a purgative action is needed, from one to two quarts, in divided quantities, should be drunk daily.

469. Capbern, in the Pyrenees.

Situated about ten miles from Bagnerès de Bigorre, the waters of Capbern are of a saline character like most of those in that neighbourhood. Their chief constituents are carboxylic acid gas, sulphates of lime and magnesia, with carbonate of lime. One authority says that they also contain carbonate of lime, while another asserts that there is not a trace of it. They are deemed useful in congestions of internal organs, and are supposed to have washed off apoplectic seizures, when the cerebral circulation has been sluggish: they stimulate the uterus and ovaries, and have been said to cure sterility: while many cases of chlorosis, leucorrhoea, dysmenorrhoea, &c., seem to have been benefited by them. The dose is from four to six tumblers, early in the morning, taking exercise between each glass. At the same time reclining or douche baths are employed.

470. Barèges, in the Pyrenees.

This village, on the Gave de Bastan, 47 miles from Pau, is about 4000 feet above the sea.—The season lasts from the beginning of June until the middle of September.

The well known sulphurous and stimulating waters of Barèges are of three kinds, as regards temperature:—viz., the hot source, the temperate, and the tepid. The principal baths are, the Bain de l’Entree, 107° Fahr.; Bain du Fond, 98°; Bain de Polard, 101°; and Bain de la Chapelle, 84°. The waters of all are limpid, have an oily nauseous flavour, and exhale an odour of rotten eggs. They contain nitrogen, sulphuret of sodium, sulphate of soda, chloride of sodium, silica, lime, &c. On their surface is found a thin gelatinous kind of pellicle called vargine, or glairine, or zoogene; which is probably of a vegetable character, is emollient and softening, and is supposed to have some peculiar power in curing chronic rheumatism.

These waters are beneficial in inveterate, squamous, putastur, and popular skin affections; in some forms of scrofula; in chronic rheumatism, sciatica, lumbago, and stiffness of the muscles or tendons; in strumous and other indolent ill-conditioned ulcers; and in irritation from the presence of carious or necrosed bone. For healing sinuses left by old gunshot wounds they are considered particularly efficacious. Pulmonary cases derive more benefit from Eaux-Bonnes and Cauterets. Moreover, the waters of Barèges are not to be prescribed when there is any tendency to inflammatory disorders, or in heart disease, or for irritable nervous temperaments. They are more powerful and stimulating than the waters of St. Sauveur.

The waters are taken internally, as well as employed in the form of baths, douches, lotions, and injection.

471. St. Sauveur, in the Pyrenees.

Situated on the Gave de Pau, in the valley of Laverdan, this watering place (2500 feet above the sea) is 44 miles from Pau, 4 from Bagnerès, and 1 from Luz. The still Alpine air is mild, and yet bracing. The season is from May until October.
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472. Bagneres de Luchon, in the Pyrenees.

This little town, in a magnificent valley surrounded by noble mountains, is 83 miles from Pau, and 2000 feet above the sea. The season lasts from June to the beginning of October. The arrangements for drinking the waters are all good.

There are upwards of 48 thermal sulphurous springs, the temperature of the waters varying from 152° to 62° Fah. Their chief constituents are sulphuret of sodium, chloride of sodium, silicate of lime, and silica; with traces of the sulphures of iron and manganese, iodide of sodium, sulphate of potash and soda, and sulphate of soda, &c. The waters are efficacious in chronic skin diseases, in stiffness of limbs after dislocations and fractures, in old ulcers, chronic bronchitis, rheumatism, and neuralgia. Also in some cases of torpid digestion, anemia, hypochondriasis, hysteria, &c. Their effects are injurious when there is a tendency to plethorism and nervous irritability. They are drunk in doses of three or four glasses, pure or mixed with milk, and are used as baths, injections, lotions, eyewashes, &c.

473. Cauterets, in the Pyrenees.

This celebrated watering place, imbedded among the mountains, in the valley of Laverdan, 3200 feet above the level of the sea, and more sheltered than Bagneres, is much frequented by Spanish invalids. July and August are the best months, but September is also good. There are some 32 sulphurated saline springs, the temperature of the warmest being 122° Fah.

Some of the waters are very stimulating, causing headache and feverishness. They contain nitrogen, sulphuret of sodium, sulphate of soda, chloride of sodium, silica, &c. Glaire or bardine, a peculiar gelatinous substance (see F. 470), is also present. They are not to be used where there is any tendency to inflammatory affections. The cases most benefited by drinking the waters are chronic derangements of digestive organs, chronic rheumatism and rheumatoid arthritis, chronic skin diseases, uterine congestions or irritations, bronchial catarrh, the early stages of phthisis, and strumous affections. The waters are often taken diluted with milk.

The baths are especially valuable in rheumatic affections, scrofula, and obstinate skin diseases.

474. Eaux-Bonnes, in the Pyrenees.

Eaux-Bonnes, a village in a sheltered valley at the foot of the Pic de Gers, is 22 miles from Pau. The air is remarkably pure and fresh. The altitude above the sea level is 2400 feet. The active mineral waters, of which the supply is scanty, have been deemed efficacious in the early stages of tubercular and other chronic diseases of the respiratory organs. They are likewise useful in scrofula generally, in chlorosis, in dyspepsia from want of tone, and in amenorrhcea. The springs are slightly alkaline, and contain chloride of sodium, sulphates of lime and soda, iodide of sodium, &c. Their temperature is about 90° Fah. The sulphurous waters are mildly stimulating; and are taken internally, and less frequently applied in the form of baths. In the commencement only small doses (three ounces) should be taken, the quantity being gradually increased to three or four glasses of six ounces each. While undergoing treatment the patient is encouraged to live as much in the open air as his symptoms will permit. A residence of about a month, for one or two seasons (the season lasts from June to the middle of September) is generally deemed sufficient. Afterwards a trip to Biarritz, for the enjoyment of sea bathing, may often be taken with advantage.
475. Eaux-Chaudes, Pyrénées.

The position of this village, hemmed in by precipitous limestone cliffs, is wild and secluded. It lies about 26 miles from Pau, and 4 from Eaux-Bonnes. The season lasts from the beginning of July until October.

Of the six springs some are used for baths, others as internal remedies. The hottest source is LE CLOT (96°); while L’ESQUIERTE has the largest amount of salt. The waters contain sulphuret of sodium, sulphate of lime, and silica. They deposit sulphuraire, a conchoidal growth. The taste of the waters is disagreeable, the smell of rotten eggs being powerful.

The waters (two to six glasses early in the morning) and baths are useful in rheumatism and sciatica, in neuralgia, in threatened pulmonary disease, in scrofula, and in atonic dyspepsia.

476. Ussat, in the Pyrenées.

The mineral baths of Ussat, in the Department of the Ariège, are 70 miles from Toulouse, the inhabitants of which city value them highly. They contain about 11 grains of solids to the pint,—chiefly sulphates and carbonates of lime and magnesia, and chloride of sodium, with traces of arsenic. The waters belong to the acidulous thermal class; are not at all unpleasant; are soothing to the nervous system; and hence prove useful in hypochondriasis, hysteria, chorea, paralysis agitans, neuralgia, cramp, muscular pains, dysmenorrhæa, irritable conditions of uterus, &c. Though sometimes taken internally, they are chiefly used as baths. The season lasts from June to October.


The little village of Vernet, 16 miles from Perpignan, is placed in a deep well sheltered valley. The waters belong to the thermal sulphurous class; but are only feebly charged with solids—amongst others with sulphuret of sodium.

Where a long course of weak sulphur waters is needed, these baths may be resorted to in the winter as well as in the summer months. Sunny walks may be had on most days in winter, the climate being mild and equable. The waters are taken internally, and employed as warm and vapour baths; and this combination of drinking and bathing is thought efficacious in chronic chest affections.

478. Panticosa, in Arragon.

This remarkable Spanish watering place, 56 miles from Pau, is situated at a level of 5800 feet above the sea. It is romantically placed in one of the little green valleys of the Pyrénées; being surrounded by the lofty granite mountains, except at one part through which flows the river Cañarés. There are four springs: two being saline, one sulphurous, and one ferruginous. The chief source is the FUENTE DEL HIUADO, which contains nitrogen in large quantity, with feeble proportions of sulphate of soda, chloride of sodium, carbonate of lime, chloride of magnesius, and silica. Its waters are agreeable, have a temperature of 81° Fahr., and numerous gas bubbles (owing to its free nitrogen) escape with it.

The waters taken internally increase the secretions of the liver and kidneys and skin; produce a sedative effect on the system; increase the appetite and general powers; and in pulmonary cases, relieve the cough. They are particularly recommended in laryngeal phthisis, in hemorrhage from lungs or stomach or uterus, and in chronic irritation of the bronchial or intestinal mucous membranes. Where there is softened tubercle, or much debility of system, they do harm. The best part of the season is from the beginning of July till the end of August.
479. Vichy, in Central France.

This important alkaline thermal bath is situated on the right bank of the Allier, in a large open valley, surrounded by hills covered with vineyards. The altitude is 780 feet. The air is temperate and pure. The season lasts from the middle of May until the same time in September.

The springs used at Vichy for drinking and bathing are nine in number; the waters of all being limpid, and having somewhat the taste of soda water. Bicarbonate of soda and carbonic acid gas form the predominating ingredients; but they also contain small quantities of the bicarbonates of potash and magnesia, with the arseniate of soda. There is also some barium, most abundant at the Source de l'Hôpital. The proportion of chief chemical components, in the sources generally resorted to, is shown in the following table:

<table>
<thead>
<tr>
<th>Source</th>
<th>Bicarb. soda, gms.</th>
<th>Carbonic acid gas, gms.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grande Grille</td>
<td>10 lb.</td>
<td>37.50</td>
</tr>
<tr>
<td>Fuits-Chemel</td>
<td>10 lb.</td>
<td>37.50</td>
</tr>
<tr>
<td>Fontaine de l'Hôpital</td>
<td>38.90</td>
<td>591</td>
</tr>
<tr>
<td>Fontaine des Célestins</td>
<td>56.86</td>
<td>394</td>
</tr>
<tr>
<td>Grand Fuits Carré</td>
<td>110.5</td>
<td>37.75</td>
</tr>
<tr>
<td>Fuits d'Hauterive</td>
<td>60</td>
<td>36.2</td>
</tr>
</tbody>
</table>

Wherever the use of strongly alkaline waters is indicated, those of Vichy will prove useful. They may be taken internally, or employed as baths; or used in both ways at the same time. The diseases which derive most benefit are—pulmonary catarrh, debility and irritability of the digestive organs, chronic enlargement of the liver and spleen; uric acid gravel and calculi; vesical catarrh; chronic gout and rheumatism; diabetes; and some cases of albuminuria. Obesity has been lessened by these waters; and they might be employed with advantage where the blood contains an excess of fibrin. The dose is from half a pint to two pints daily; but they must not be continued too long, lest a superalkaline condition of the blood be induced. The spring of the Grande Grille is in most repute, and is especially useful in liver diseases; while that of the Célestins is best for disorders of the urinary organs, as well as in the uric acid diathesis. The Hospital spring is in favour for chronic gastro-enteritis.

The Vichy waters are exported in considerable quantities, and it is supposed without their undergoing any deterioration.

Vals possesses several springs, all alkaline from the presence of bicarbonate of soda, but slightly differing in the proportion of the saline constituents. The St. Jean is the weakest, and is useful chiefly in dyspepsia. The Précipité and Démêlé are more alkaline and slightly laxative; they are employed in gouty and renal affections. The Magdeleine and Rigolotte contain a small proportion of iron, and are considered to be invigorating.

480. Mont D'Or, in Central France.

At this bath there are six thermal sources and one cold spring. The water of the latter, St. Marguerite, is acridulous from the carbonic acid it contains, has a temperature of 52°Fahr., and is an agreeable drink mixed with milk or wine. The thermal sources are Le Grand Bain (108°), the Source of Casan (113°), the Fountain Caroline (107°), the Bain Raymond (109°), the Rigny (109°), and the Madeleine (114°). The ingredients in the different waters only vary in quantity; consisting of the carbonates of soda and lime, chloride of sodium, sulphate of soda, with mere traces of iron and alumina. They all contain an excess of carbonic acid. The Madeleine spring is also strongly arsenical.

Besides drinking the waters, most invalids employ warm bathing. The effect is to increase the perspiration; and at the end of a few days to produce "the bath fever" (lassitude, depression, constipation, &c.), which soon passes off. The invalids who will derive benefit from a visit to Mont D'Or are such as have chronic pulmonary catarrh, some kinds of asthma, rheumatism, and congestion of the liver. Mischief will result to persons of a languid circulation, and such as have a tendency to hemorrhage.
The season is from the middle of July to the end of August; but the waters should not be used for more than a fortnight on account of their exciting properties. The visitors who drink them take three or four glasses daily.

481. Néris, in Central France.

The thermal springs of Néris are resorted to, from May until October, for the purpose of drinking the waters and bathing in them. There are four wells; the temperature of the waters at their source being about 120° Fahr. They are insipid and oily; containing only small proportions of carbonic acid, bicarbonate of soda, sulphate of soda, and chloride of sodium. Conifers grow feebly in the basins. These waters are recommended in cases of nervous and hysterical excitement, in rheumatism, and prurigo.

482. St. Galmier, in Central France.

These waters, owing to their richness in carbonic acid gas, are agreeable whether sole or pure or mixed with wine; while they have the property of hastening digestion, increasing the appetite, and augmenting absorption from the alimentary canal. The chief salts in them are the bicarbonates of lime and magnesia.

The St. Galmier waters are cold, and resemble Seltzer water. They are in common use at Lyons; being deemed useful in gastric affections, and for preventing the formation of urinary calculi.

483. Aix-la-Chapelle (Aachen), in Rhenish Prussia.

This town, in which Charlemagne was born and in which he died in 814, about 43 miles W.S.W. of Cologne, is situated in a valley between the Rhine and Maas rivers, and is surrounded by well wooded hills. It is 450 feet above the sea level. There are eight principal springs,—six thermal and slightly sulphurous, and two cold chalybeate. Their therapeutical effects are due to the high temperature of the water (varying from 111° to 131° Fahr.) and the sulphur and chloride of sodium contained in it. The latter salt is found in the proportion of about twenty grains to the 16 ounces; while the sulphate of sodium varies from three-quarters to a quarter of a grain.

Of the gaseous constituents the sulphured water is the most active, although, it is only present in small quantity. The ELISERRUNnen is the principal drinking fountain; its exceedingly unpleasant water being derived through subterranean pipes from the hottest and strongest of the sources—the KAISERBAD. Very rarely the chalybeate springs are employed as an "aftercure;" but they have little power, one containing half, and the others three-quarters of a grain of iron in the sixteen ounces, with some carbonic acid.

In doses of a few glasses these clear transparent waters do not produce much appreciable effect; their chief use being externally,—as vapour baths, douches, shampooing, &c. The baths have considerable reputation for curing acrofula, skin diseases (acne, psoriasis, and prurigo), hepatic and renal complaints, chronic gout and rheumatism, functional derangements of the uterine organs, rebellious ulcers, and the ill effects produced by the use of mercury or lead. In cases of long standing stiffness about the joints, as well as in sprains, the rubbing and kneading and stretching of the muscles and articulations which are employed prove very efficacious. The springs are to be avoided where there is any tendency to cerebral, pulmonary, gastric, or uterine haemorrhage. A course of the baths lasts from four to six weeks. The season begins early in June, and ends about the middle of September.

At Borcette, or BURTSCHEND, a suburb of Aix, there are several bath establishments. The thermal springs are divided into the sulphurous and non-sulphurous. The most important of the former is the Trinqueville; the water of which contains chloride of sodium, with sulphate and carbonate of soda, and has a temperature of 140° Fahr. The Kochbrunnen is the most used of the non-sulphurous
The waters of Bocette are recommended for the same class of cases as is sent to Aix. The advantage of the former place over the latter is, that it affords a much cheaper residence.

484. Kreuznach, in Rhenish Prussia.

The rather nauseous and bitter waters of this Spa have a considerable reputation for the cure of uterine diseases, as well as of most scrofulous affections. The chief waters are those of the Elizabeth Brunnen, having a temperature of 54° 50" Fahr. They contain about 90 grains of solid constituents in 18 ounces—chiefly—chloride of sodium (79), chloride of calcium (19), chloride of magnesium (4), bromide of magnesium (4), oxide of iron (9), with a trace of iodide of magnesium, &c. The Karlsbader water has a temperature of 59°, and 75 grains of salts in the sixteen ounces; the Theodorshalee 79° 35"; and 87 grains; while for the chief well of Munster the numbers are 81° 50", with from 64 to 76 grains.

In drinking the waters it is better to begin with small quantities, which may be drunk pure or mixed with hot milk. The baths are generally taken tepid; "mother lye" (the brownish glutinous liquid left in the boiling pans, after the salt has been crystallized and removed) being added to the water, in proportions suitable to the requirements of each case. In uterine affections, fomentations and vaginal injections are employed in addition to the baths.

The Kreuznach waters have proved valuable in congestions of the uterine organs; as well as in chronic inflammatory affections of these parts, in hypertrophy and induration, in uterine displacements, and in derangements of the menstrual functions. Dr. Pflieger, who has had very great experience in the use of these waters, tells the Author that he has never seen a true fibroid tumour of the uterus absorbed through their influence, but when such a growth is edematous or congested, the waters relieve these complications. Hypertrophies of the mammary glands, cases of chronic skin disease, as well as scrofulous ulcers, are oft-times benefited by these waters.

The season extends from the end of April until the beginning of October. The stay which a patient should make may vary from six to eight weeks.

The springs of Naunheim, a village of Hessen-Cassel, resemble those of Kreuznach, except that they contain rather more chloride of sodium, only a trace of bromide of magnesium, and none of the iodide of magnesium. There is also an abundance of carbonic acid; and the temperature of the four chief springs varies from 72° to 92° Fahr. The waters are drunk and used as baths; while like those of Kreuznach, they are recommended for all strumous affections.

485. Neuenahr, in Rhenish Prussia.

This village, in the mild and picturesque valley of the Ahr, is easily reached from Cologne. Of the springs, the Victoria is the best. Mr. Miller, the late Professor of Surgery in the University of Edinburgh, says that it is the richest of all known brunnens in carbonic acid. It furnishes some 29,792 cubic feet of water daily; an analysis of which has shown the presence of small quantities of bicarbonate of soda, sulphate of soda, chloride of sodium, bicarbonate of magnesium, bicarbonate of lime, protoxide of iron and alumina, silica, and free carbonic acid.

The waters are taken internally and applied externally. The dose is from two to five tumblerfuls, early in the morning; with half the quantity in the evening. The temperature of the water is between 76° and 80° Fahr., and the taste is pleasant and pleasant, resembling—as an English valet said—"Belter water with the chill off." The best time for the bath is two or three hours after breakfast; the temperature of the water being about 85°, and the time for remaining in it twenty minutes. When the invalid is acclimatized, the douche may be used if needful.

The waters are tonic and anti-rheumatic; acting especially on the mucous membranes and the glandular system. They are useful in simple dyspepsia, diminished secretion of bile, irritability of the bladder with excess of uric acid in the urine, chronic gout, and rheumatism, asthma uncomplicated with organic disease, chronic affections of the larynx or bronchi, eczema and prurigo, and chronic uterine maladies. In a person apparently healthy, Dr. Weisbuch found that the use of the waters was followed by these effects:—A sense of warmth in the
stomach soon after drinking; exhilaration; increased flow of urine; increased appetite; and increased salivary and bronchial secretions. After a week the bowels were affected; copious, soft, bilious evacuations being produced. The urine became neutral, but never alkaline.

486. Ems, Duchy of Nassau.

Ems, or Bad-Ems (as the Spa is called, to distinguish it from the old village of Dorf-Ems), lies on the right bank of the Lahn, enclosed in a narrow valley between high mountains, 15 miles N. of Wiesbaden. Ems is 290 feet above the sea level. The air is mild; the situation attractive. There are several springs. The waters are alkaline, saline, and gaseous; while the temperature varies from 86° Fahr. to 133°. The chief constituents are carbonate of soda, chloride of sodium, and carbonate of magnesia; with small quantities of carbonate of lime, iron, magnesia, potash, and lithia. Their action is that of a mild alterative, diuretic, and laxative; and they are believed to favourably influence all catarrhal affections of the mucous membranes.

The principal drinking springs are the KRAHNCHENBRUNNEN and the KESSELBRUNNEN. The waters of the former are clear, odourless, have a temperature of 80° and leave a soapy taste owing to the soda they contain. According to STRUBE each 16 ounces contains 15½ cubic inches of free carbolic acid gas. The Kesselbrunnen or Kurbrunnen waters give out more carbonic acid, and are 118°. The dose is from one to six beakers, each holding about 4 oz. In many cases it is an improvement to add one-third part of goats' or asses' milk to the measure.

The waters are also employed externally, the baths being partly filled overnight to lower the temperature. The BUBENQUELLE (boy's spring), 117°, is used as a vaginal douche; and is in repute for the cure of sterility due to uterine and vaginal leucorrhoea, or to inflammatory affections of the cervix uteri.

The waters generally are recommended in chronic bronchial and pulmonary affections, with irritable cough but without profuse secretion, in the dyspepsia of such as have only a tendency to phthisis, as well as in eczema and prurigo. For the relief of the lithic acid diathesis they are valuable, but less so than those of Vichy. For drinking and bathing, French and German visitors usually resort to Ems in June. The best months are May, June, September, and October. Our own countrymen, however, seem to prefer July and August; though the narrowness of the valley in which this bath is situated causes the air to be very oppressive and relaxing during those two months.

The mineral springs of FACHINGEN, a village 9 miles E.N.E. of Nassau, on the Lahn, resemble those of Ems, the carbonate of soda and carbonic acid being present in rather larger proportions. The waters form an agreeable antacid drink in some forms of dyspepsia.

487. Selters, in Nassau.

This village, in a pleasant valley 37 miles N. of Wiesbaden, is everywhere famous for its mineral springs; an enormous quantity of Seltzer water being annually exported. Selters is 800 feet above the sea level.

The water has a temperature of 60° Fahr., and contains much more than its volume of carbonic acid gas. It has about 32 grains of solids in the sixteen ounces; chiefly chloride of sodium (18%), and carbonate of soda (9%), with minute quantities of sulphate of soda, lime, magnesia, and iron. Seltzer water stimulates the stomach; and is a grateful, antacid, slightly alterative drink.

APPLENARIS water, somewhat richer in saline ingredients but otherwise similar in all its properties to Seltzer water and very agreeable as a drink, has lately been most extensively used.

488. Schwalbach and Schlangenbad, in Nassau.

SCHWALBACH or LANGENSCHWALBACH, 8 miles N.W. of Wiesbaden, consists of one long street, in the middle of which is the Kurhaus. The climate is bracing; the altitude is 900 feet. The gaseous chalybeate waters, with a temperature of 50°
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Fahr., owe their invigorating properties to carbonate of iron, which is held in solution by an excess of carbonic acid. They also contain a small amount of the bicarbonate of soda, magnesia, and lime. The chief springs are— the Weinsbrunnen, near the Kursaal, which contains most iron, and is believed to counteract the evils arising from excessive indulgence in wine; the Paulinenbrunnen, the mildest, which was formerly used by invalids from tropical climates with torpid livers, but which appeared to be deserted in 1867; the Rosenbrunnen, only employed externally, the baths being heated by steam to 86° or 90°; and the Stahlbrunnen, in the northern valley, which is the most exciting of the springs. The waters are drunk fasting, to the amount of one to three glasses, twice a day; and they may be strongly recommended in cases of impaired strength where a ferruginous tonic is indicated, as well as in those examples of dyspepsia and constipation which are due to a torpid and anemic condition of the walls of the alimentary canal. The bath should be taken about two hours after breakfast, omitting its use every third or fourth day. The best time for a visit to Schwäbisch is from the middle of June until the end of August.

Rather more than two miles from Schwäbisch, in a pleasant valley, with romantic environs, is Schlangenbad. The climate is pure and bracing; the height above the sea being 930 feet. As a Spa Schlangenbad is of insignificant value, owing to the small amount of solid constituents—only a few grains of carbonate of soda, lime, and magnesia, with common salt—in the waters. Warm saline and mud baths are used by the visitors; such amusements being in repute for softening and whitening ("satinizing") the skin, and for allaying nervous irritability. The season lasts from the beginning of June until September.

489. Wiesbaden, in Nassau.

Wiesbaden, the capital of the Duchy of Nassau, lies on the southern slope of the Taunus mountains, 3 miles N.N.W. of Mayence. It is the most frequented of the watering places in Germany. The season extends from June until September, but it is very hot in July and August. Owing to the shelter afforded by the several peaks of the Taunus, the autumnal and winter climate is good.

There are some eighteen or twenty thermal springs, but only one is of much importance. This, the Kochbrunnen, rising nearly in the centre of the town, appears literally to resemble a boiling well. The temperature varies from 150 to 160° Fahr., volumes of vapour are emitted, and the water contains some 63 grains of solids in the sixteen ounces. The salts are chloride of sodium (52); with small quantities of potash, lime, iron, magnesia, arseniate of lime, bromide of magnesium, &c. The carbonic acid gas is one-fifth of the bulk of the water. Sir Francis Head and Dr. Granville compare the taste to that of weak chicken broth slightly salted. Taken in a dose of three or four glasses, cooled, before breakfast, it has a slightly laxative and diuretic effect, and increases the appetite. As baths, at a temperature varying from 86° to 98°, about two hours after a light breakfast, the waters are somewhat soothing, while they increase the action of the skin and kidneys.

The cases in which these waters are likely to prove valuable, are chronic gut and rheumatism, hepatic congestion with hemorrhoids, and chronic skin diseases connected with abdominal plethora. They will be injurious in debility, in congestion of the uterine organs, or where there is a tendency to apoplectic or any other form of hemorrhage. The invalid may know that they disagree, when prostration, loss of appetite, constipation, irritability, and palpitations are produced; or when the doses give rise to a feeling of disgust, especially if they have been previously regarded as rather agreeable. The course should not to extend beyond four or five weeks. The country in the neighbourhood of Wiesbaden is charming.

490. Soden, in Nassau.

The waters of Soden, in the Taunus near Frankfort, are saline and gaseous, issuing from twenty-three springs, scattered through the village. Their temperature varies from 64° to 75° Fahr.

The most important springs are,—the Milchbrunnen containing 23 grains of solids in the 16 ounces; 17 grains being chloride of sodium, 3 chloride of potassium, with 17 cubic inches of carbonic acid gas. The Warmbrunnen has 36 grains
of solids, 26 of which are chloride of sodium; the carbonic acid gas being 35 cubic inches. The Wilhelmsbrunnen has 117 grams of salts, 104 being chloride of sodium, with 48 cubic inches of gas. Whilst the Soolbrunnen has 129 grams, 114 of which consist of the same salt that predominates in the others, together with 14 cubic inches of gas. Where alternative aperients are needed, these waters may perhaps be recommended. They are deemed useful in pulmonary, strumous, gouty, and uterine affections.

One advantage possessed by Soden is the presence of the two ferruginous springs of Kronthal; so that the visitor having employed the alternatives of the first Spa, may strengthen the system with the mild chalybeates of the Stahliquelle or Wilhelmsquelle. The climate of Kronthal is useful in chronic bronchial affections.

491. Homburg, in Nassau.

Homburg lies about nine miles north-west of Frankfort; being 660 feet above the sea level. The air is invigorating and bracing during the months of June, July, and August; but it is injurious to such as have delicate lungs, owing to the temperature being very variable. There are four cold (about 50° Fahr.) mineral springs; all springing near each other in the park or Kurgarten. The most frequent is the Elisabethquelle, containing about 110 grams of salts in the 16 ounces, and being strongly charged with carbonic acid (48 cubic inches). The chief salts are chloride of sodium (79), the chlorides of magnesium and calcium (15), and carbonate of lime (11); with small quantities of carbonate of magnesia, sulphate of soda, carbonate of iron, and silica. The Kaiserquelle has more chloride of sodium (117), more chloride of calcium, and a little more iron. The Stahliquelle has the same amount of common salt as the Elizabeth spring, but is more ferruginous than either of the others. While the Ludwigquelle is weak in almost all its constituents. The flavour of all the waters is refreshing, saltish, somewhat bitter, and ferruginous.

Gout, dyspeptic and other derangements of the abdominal viscera, strumous enlargements of the external glands and mesentery, debility of the reproductive organs, constipation, obesity, and hypochondria are the diseases most likely to be benefited. From two to four tumblerfuls of the waters are taken fasting during three or four weeks. Though chiefly used internally, there are baths, douches, &c.


This renowned Spa, rather more than 600 feet above the sea, in one of the most delightful valleys of the Black Forest, about six miles from the Rhine, has 16 weak saline springs, the temperature of which varies from 117° to 161° Fahr. The chief spring, and the only one demanding notice, is the Ursprung; which has a transparent, inodorous, saltish water. Its chemical constituents are merely about 23 grams to the 16 ounces, 16 grains being chloride of sodium. There are also 24 grams of sulphate of lime, about 1-10 of a grain of carbonate of iron, with less than half a cubic inch of carbonic acid. Recent analyses have shown the presence of lithia, in greater abundance than in any other springs. Though their efficacy must be slight these waters are often taken internally. Some drinkers add goat's milk to them, or whey, or aperient salts. But they are chiefly to be employed where simple hot baths are needed, while the invalid is enjoying beautiful scenery, in pure mild air. They may be recommended in chronic gout and rheumatism, dyspepsia from overwork, nervous affections, &c. The season lasts from the beginning of May until the 1st October.

The waters of Wildbad, about thirty miles from Baden-Baden, and situated in the kingdom of Württemburg, contain only 4 grams of salts in the 16 ounces, and have a temperature varying from 86° to 98° Fahr. Where hot baths and douches are needed in chronic paralysis, rheumatism, &c., a six weeks' sojourn at Wildbad may perhaps be recommended. The climate is very bleak from November until May; and then in the four succeeding fashionable months the heat is most oppressive. Wildbad is some 1320 feet above the sea.
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493. Kissingen, in Bavaria.

Kissingen, one of the most fashionable watering places of Germany, is situated in a fertile valley, about 30 miles N.N.E. of Würzburg. Its height above the sea level is some 800 feet. The tonic, laxative, and alterative waters are all cold (about 55° Fahr.). The most important spring is the Ragoocy, containing 65 grains of solids in the 16 ounces, according to Liebig, with 41 cubic inches of carbonic acid gas. The principal salts are chloride of sodium (45), carbonate of lime (8), sulphate of magnesia (4), chlorides of potassium and magnesia (5), with minute quantities of chloride of lithium, bromide and iodide of sodium, and carbonate of iron. The waters of the Panderbrunnen have rather a smaller amount of solids; while those of the Maxbrunnken and of the Theresebrunnen are very much weaker, and contain no iron.

The Ragoocy spring is most used early in the morning, from three to six glasses being taken. In the evening the milder waters of the Pander are preferred. The effect is to quicken the circulation, and to stimulate the secretions of the mucous membranes generally but especially those of the alimentary canal. Hence they are valuable in habitual constipation, congestion of the liver or kidneys, in dyspeptic eructations or flatulence, and in strumous enlargements of the glands. They may also do good in threatened tubercular diseases of the mesenteric glands. Gouty and calculous cases also derive benefit.

The baths are prepared from the waters of the wells just named, some of the "mother water" of the Soelenbrudel being frequently added. This spring has a temperature of 62°; and contains 167 grains of solids in the 16 oz., upwards of 100 consisting of chloride of sodium. The astonishing flux and reflux of the Sprudel, some eight or nine times a day, is one of the sights of the town.

About 41 miles from Kissingen is the Spa of Bocklet, in Bavaria, which contains several chalybeate and a weak sulphur spring. The temperature of the waters is about 52°; while there is rather more than half a grain of carbonate of iron in the 16 oz., with 39 cubic inches of carbonic acid gas. They also contain a small amount of the sulphate of soda and magnesia, chloride of sodium, carbonate of lime, &c. Independently of the constant interchange of visitors between Kissingen and Bocklet, the baths of the latter (especially the "douche ascendant") have a considerable reputation for the cure of sterility, and for breaking off the tendency to habitual abortion. Bocklet is 620 feet above the sea.

Bruckenauf, in Bavaria, is also only a few hours' drive from Kissingen. The waters contain scarcely any salts, but have about a quarter of a grain of iron in the 16 oz., with at least 35% cubic inches of carbonic acid gas. Their temperature is 49°. They are often employed by those who, after going through a course of the solvent waters of Kissingen, require a pure mild tonic.

The Adelheidsquelle is a well known salt water spring, found at the small village of Heilbrunn, in Bavaria. Prettily situated, not many miles from Munich, this village is said to be 2400 feet above the level of the Mediterranean. The well affords a comparatively small supply of water, which has a temperature of 56° Fahr. It contains 47 grains of solids in the 16 ounces; upwards of 38 grains consisting of chloride of sodium, with 6 grains of carbonate of soda. There are also small quantities of iodide and bromide of sodium, silica, &c. The alterative effect of these waters renders them useful in all kinds of scrofulous affections. The season is from the early part of May until the end of September. The accommodation for visitors is scanty.

494. Gastein, in Austria.

A few hours' drive from Salzburg is the village of Gastein, in the most beautiful part of the Tyrol. It is one of the highest baths in Europe, being 3200 feet above the Mediterranean. The houses are grouped round the edge of the mountain torrent Ache, which here forms a splendid waterfall. The bracing alpine air is invigorating for such as have strong lungs, but the climate is often too raw.
and unsettled for the delicate invalid to depend upon it. Mean annual temperature 47° Fahr. July and August are the season months.

There are six or eight very weak thermal springs, having the same chemical composition, but varying in temperature from 95° to 118°. In 16 oz. of water there are only 2·68 grs. of solida, sulphate of soda being the chief (1·51). The waters, after cooling to about 90°, are used as baths, and are said to stimulate the nervous system. It seems certain that the premature old, the hypochondriac, the paralytic, and the sufferer from chronic rheumatism derive benefit.

The waters of Teplitz, in Bohemia, very much resemble those of Gastein, as regards temperature and chemical power. They contain only about 4·64 grains of solida in the 16 oz.; the carbonate of soda and lime, with sulphate of soda being the chief ingredients. The baths are used in gouty and paralytic affections; as well as in rheumatoid arthritis, chronic disease of the spine and large joints, and functional derangements of the uterine organs. The town lies in a fertile valley, 640 feet above the sea; the environs are remarkable for their beauty; while the climate is healthy and genial.

495. Friedrichshall, in Saxe-Meiningen.

This place has long been noted for the manufacture of Glauber's salts and common salt. Of late years the purgative waters have acquired a high reputation, more especially for cases where it is necessary to promote excretion from the liver, kidneys, and bowels.

The bitter saline water of Friedrichshall is bright and clear, of a light yellowish tinge, free from smell, and possessing a salt bitter flavour. According to LIRBIG's analysis (made in 1847) it contains about 194 grs. of solida in the 16 ounces, with 5·32 cubic inches of carbonic acid gas. The chief ingredients are chloride of sodium (81), sulphate of soda (46), sulphate of magnesia (30), chloride of magnesium (30), sulphate of lime (10), with small proportions of sulphate of potash, carbonate of magnesia, bromide of magnesium, carbonate of lime, and silica.—The dose is from three ounces to a pint or a pint and a half, according to the aperient effect required. Large quantities of this water are exported annually to different parts of Europe.

496. Carlsbad, in Bohemia.

This town occupies the bottom of a narrow winding valley, on the banks of the Tispe, 70 miles W.N.W. of Prague. The season extends from the beginning of June until the end of September; but the month of May is very quiet and pleasant and healthy, although the mornings are often cold. The "cure" generally occupies from five to six weeks. Carlsbad is 1200 feet above the sea.

There are several important springs, chiefly differing from each other only in temperature. The most important is the Sprudel; the waters of which bound upwards for four or five feet, and then fall back in foam, while giving off clouds of vapour. The temperature is about 165° Fahr., and there are some 45 grs. of solida in the 16 oz. The principal salts are sulphate of soda (20), sulphate of potash (9), chloride of sodium (8), and carbonate of lime (2); with small quantities of carbonate of soda, carbonate of iron, phosphate of alumina and silica. The carbonic acid gas is nearly 3 cubic inches.—The Schlossbrunnen contain only half the amount of sulphate of soda, double the quantity of carbonic acid gas, and have a temperature of 123°. The heat of the waters of the Theresienbrunnen is 131°, and as regards important ingredients may be said to resemble the Schlossbrunnen. The Marktsbrunnen differ from the others principally in containing a little soda and bromide of sodium. The temperature is 139°.

The waters are chiefly taken internally, early in the morning and again in the evening. The dose varies from one or two glasses to ten or twelve; according to the stimulating and alterative and aperient effects on the digestive organs and abdominal visera generally, which it is desirable to produce. The cases most benefited are,—liver and abdominal diseases, diabetes, gouty and rheumatic disorders, calculous affections, and hypochondriasis with dyspepsia and constipation. The waters are also useful in rheumatoid arthritis, sciatica, and in jaundice from
obstruction by gallstones. Old Indians, with enlarged livers, often derive remarkable relief. Baths of the cooled mineral water are raw but seldom resort to, though for one hundred and fifty years invalids only visited Carlsbad for the purpose of bathing. Sometimes the peat soil from the neighbourhood, mixed with Sprudel water, is used as a poultice, &c.

497. Marienbad, in Bohemia.

Marienbad, in the territory of the abbey of Topl and the district of Eger in Bohemia, is about five hours' drive from Carlsbad. The air is pure and dry, but changes in temperature take place rapidly owing to the height of the village—1912 feet above the level of the North Sea. The season lasts from the commencement of May until the end of September. There are several cold (from 43° to 50° Fahr.) saline chalybeate springs; the chief constituent being sulphate of soda, with a moderate quantity of iron and carbonic acid. The waters when drawn are quite clear, but as the gas escapes they become turbid from deposition of the carbonates. The KREUZBRUNN—the principal spring—has 69 grms. of solids in the 16 oz., with 81 cubic inches of carbonic acid gas. The chief salts are sulphate of soda (31), chloride of sodium (13), carbonate of soda (9), and carbonate of magnesia (3); with small quantities of the carbonates of lime, lithia, iron, manganese, &c. The FERDINANDBRUNN has nearly the same solid ingredients, but with nearly 14 cubic inches of carbonic acid gas. The WILDBRUNN is much weaker in sulphate of soda (2), and brommum salt (9), but its proportion of carbonic acid gas is 18 cubic inches. The waters of these brunn are all used for drinking. The CAROLINENBRUNN has only 11 grms. of solids in the 16 oz., sulphate of soda being the chief; but there are 16 cubic inches of carbonic acid gas. The AMBROSIOBRUNN is still weaker (7 grms. in 16 oz.), with 13 inches of gas; while the MARIENBRUNN has scarcely any salts (2 grms. in 16 oz.), with 9 cubic inches of carbonic acid gas. The well of the Marienbrunn is used only for water and gas baths; but the Caroline and Ambrosius waters are employed internally as well as externally.

The effect of the Marienbad waters is laxative, alterative, and tonic, in proportion to the dose (from one to six tumblers); while they increase the action of the liver and kidneys, and promote appetite. Hence they are particularly valuable in chronic disorders of the abdominal viscera. The mud baths and poultices are made with the Marienbad water mixed with a black mineral pulverulent substance, brought from a neighbouring peat bed. They stimulate the skin, heal chronic ulcers, and disperse glandular swellings. The gas baths (carbonic acid with a small amount of sulphured water) soothe muscular and neuralgic pains, remove torpor of the female sexual organs, and generally tranquillize the nervous system.

The bitter saline waters of PULLNA, in Bohemia, are very nauseous and indigestible, while they possess no advantages over the ordinary preparations sold by the chemist. Their chief ingredients are sulphate of magnesia (36 grains in the 16 oz.), sulphate of potash (82), sulphate of soda (12), chloride of magnesia (16), carbonate of magnesia (6), with sulphate of lime, carbonate of lime, and bromide of magnesia. Pullna water is largely exported.

498. Eger, in Bohemia.

This frontier town stands on the right bank of the Eger, 92 miles W. of Prague. In the district, some three miles off, is the Spa of FRANZENBAD. The tonic solvent waters of this spring have a refreshing acidulous taste, a temperature of 92° F., with 42 grms. of solids in the 16 oz. The chief of these are sulphate of soda (24), chloride of sodium (9), and carbonate of soda (6); together with the carbonates of magnesia, lime, iron, lithia, manganese, and stroncia, and 40 cubic inches of carbonic acid gas.

The waters of the Franzenbad and other wells are taken internally and employed as baths. They strengthen the nervous system, improve digestion, stimulate the circulation, relieve bronchial affections, and act powerfully on the uterine organs. Mud and gas baths are especially in favour. The boggy earth is
sifted free from foreign matters, and converted into black mud; which is heated to 100°, and which contains sulphate of soda, iron, lime, alumina, and uimic acid. In this mineralized mud the body is immersed for fifteen minutes, when the patient transfers himself to a plain water bath to remove the dirt. The treatment is said not to be disagreeable; and it may perhaps prove beneficial in chronic skin diseases, indolent ulcerations, old rheumatic affections, gouty deposits, and in paralysis without active disease of the nervous centres. The gas baths are considered as specifics for the cure of scrofulous ulcers.

499. Aix-les-Bains, in Savoy.

This beautiful and sheltered town, 783 feet above the sea, may be reached by railway from Paris in about fifteen hours. The climate is mild but yet bracing, and is especially adapted to invalids from April until October. There are two chief springs; but as they are only slightly mineralized, the effects which they produce must chiefly be due to their temperature—about 116° Fahr. The Sulphur Spring contains but little more than 3 grains of salts in the 16 oz., with a small quantity of carbonic acid and sulphuretted hydrogen gas. The Alum Spring, so called on the locus a non teteo principle, since it contains no alum appreciable to the senses, has the same composition minus the sulphuretted hydrogen.

The waters are chiefly used externally, and especially in the form of douches. They are valuable in chronic rheumatism, sciatica, rigidity of tendons or muscles after sprains and contusions, chronic skin affections, diseases of the bones, nervous disorders, &c.

300. Baths of Switzerland.

to 124° Fahr. The latter is the heat of the St. Laurent or Lorenzquelle. All the waters have the same composition, the solid constituents being about 15 grs. in the 16 oz. The chief salt is the sulphate of lime (nearly 13), with small quantities of the sulphates of magnesia and soda, &c. It is the custom to bathe in common; there being four public piscine, each about a yard deep, and each capable of accommodating some forty bathers, with their small floating tables. On the first day the patient remains an hour in the water, clothed in a long flannel gown; the duration being daily increased till it extends to four or five hours in the morning, and for a shorter period again in the afternoon. About the twelfth day, an erythematous rash called the poussée appears over the body, with prickling sensations of heat, and febrile symptoms; its disappearance being followed by desquamation of the cuticle. The duration of the bath is then gradually diminished by half an hour daily, until the cure is complete in some twenty-five or thirty days from the commencement. This peculiar practice is recommended in cases of scrofula, enlargements of the liver or spleen, chronic gout and rheumatism, obstinate eczema and poriisis, old wounds and ulcers, calculus affections, &c. The season is from May until October.

Pfaffers, in the Canton of St. Gallen in the Grisons, is a wild and sombre dell. It is 2115 feet above the sea. The feeble thermal water is conducted down the romantic glen of the Tamina by wooden tubes, to the hotel and bathing house at Ragatz, in the valley of the Rhine. The salts in the water are scarcely equal. 2 grains in the 16 oz.; the chief being the sulphate of soda and lime, with chloride of soda and carbonate of lime. The temperature is nearly 106° Fahr. The bath is used twice a day, for about half an hour each time; and is useful in calming nervous irritability, and in relieving neuralgia, hysteria, &c. The waters are also used for drinking—from four to eight tumblerfuls. The invalid should be advised to reside at Ragatz rather than at Pfaffers, which generally has a cheerless and sunless aspect. When, however, the fall of snow during the preceding winter