

stimulant to sluggish granulations it may be of service. However, it should never be used early. Caustics should never be applied to a sore that cannot be thoroughly exposed and properly cared for. After cauterizing, the sore should be treated with moist bland dressings for a time, lint soaked in lead-water wash or a solution of boracic acid or black wash, and changed frequently. After a few hours this dressing should be changed to one of the powders already named.

As a general rule, ointments and greasy preparations should not be employed, except, perhaps, over the powder to keep the cloth from sticking and thus prevent bleeding when the dressing is changed, or when the ulcer is granulating, to promote healing. Internal medication, unless the individual is much run down, is not usually needed. General tonics (iron, cod-liver oil, syrup hypophosphites, etc.) may often be of service in debilitated cases.

Mercury should never be given in a case of chancreoid.

In old sluggish chancroidal ulcers, a thorough curetting is sometimes of service. In women the treatment is more difficult by reason of the inability to keep the parts clean and reach all the points of infection. Hot injections of soap and water or borax and water followed by a corrosive douch, 1 to 5,000, should be used once or twice daily, and one of the powders already mentioned dusted on all the available spots.

A ten to forty per cent. solution of formalin gently applied, or a saturated solution of pyoktanin blue, has been highly recommended in sluggish cases.

In general, it is always advisable, in the vast majority of cases, to avoid using any sort of caustic. When used, it should be applied only to carefully selected cases, and should be used with the greatest care.

C. Morton Smith.

CHANGE OF LIFE.—This term, in common use, signifies the series of phenomena which are apparent at the end of the child-bearing period.

It is applied exclusively to women, though an analogy has been observed between some of the conditions which affect women at the period in question and similar conditions which have frequently been noted in men at the time when their physical powers have reached their culmination.

The term which is generally accepted and used by medical writers as correlative with *change of life* is *menopause*.

This term is sufficiently explicit for only one link in the chain of phenomena which comprise the *change of life*, to wit, the cessation of the monthly flow. For this reason the common term is the more exact and comprehensive and therefore presents claims for its general use.

The *change of life* is really one of the great epochs in the life of woman, for it not only serves as the boundary line between the period in which she is able to reproduce herself and her species—period of fruitage,—but it marks the limit of the progressive stage of her physical condition in general, deterioration being henceforth the prevailing process, whether it develops slowly or rapidly.

Time of its Occurrence.—Like all the other functions of animal life, this one also is subject to great variations both as to the time of its occurrence and the events which characterize it.

According as it occurs early or late in life it may be premature, normal, or retarded, and it may be natural or artificial according as it is or is not solely the product of physiological forces.

In temperate climates we may expect its appearance in the majority of cases between the fortieth and forty-fifth years; family or race peculiarities may advance it two or three years or defer it for an equal period. It is premature when it occurs prior to the fortieth year and it is retarded when it occurs later than the fifty-fifth.

Influences which Modify its Occurrence and its Course.—Race. The nearer a tribe or race of human beings approaches the lower animals in its intellectual develop-

ment the less marked will be the menstrual function in its women.

Menstruation is quite clearly the development or evolution of the *rut* or *estrus* in the lower animals. In the apes and monkeys we observe very frequently a distinct regularity in what may be termed for them the menstrual flow. Neither in the animals nor, so far as my knowledge extends, in the lower orders of human beings are there well-defined conditions which might constitute the *change of life*, at least as this experience is observed in the more advanced races.

In proportion as a community or race advances in civilization do we see the menstrual function and the *change of life* assume distinctness and character. While it does not follow that their unusual or pathological features are necessarily the result of civilization, since there are countless examples in which no appreciable disturbance is experienced from either, it is certainly true that such disturbance does accompany civilization.

Climate. The influence of extremes in temperature acts upon the *change of life* precisely as we would anticipate. In the tropics vegetation is luxuriant, matures early, and is profuse in its fruitfulness, but the duration of its life is shortened by the very excess of this profuseness. It is the same, to a certain extent at least, with human females who are native to the tropics: they mature and bear their children early, and in frequent instances reach the menopause between twenty and thirty. This has been observed especially of the Arabs of the desert. To the Caucasian races transplantation to the tropics means a distinct lowering of vitality, with a great diminution in reproductive power and a consequent tendency to the early cessation of the menstrual function, and the advent of the *change of life*. In the Arctic regions the effect of extreme cold upon vitality is similar to the effect of extreme heat, though it may be made endurable to a greater degree than the latter. The natives of the Arctic regions are stunted in form and more or less deficient in vitality. This is especially the case after they have endured the rigors and the darkness of the long Arctic night. The women seldom mature earlier than the twentieth year, menstruate very infrequently, and seldom have more than one or two children. The duration of life is not great, and the *change of life* comes between thirty and forty.

Altitude. The significance of this factor is due, of course, to the change in the air pressure. Women may gradually become habituated to any condition of atmospheric pressure, but the effects which obtain prior to such habituation are very distinct. A change to the sea level by one who has lived away from the sea and at more or less of an elevation generally suspends or otherwise disturbs the menstrual flow, and in cases in which there is decided constitutional disturbance it is possible that the *change of life* might be hastened by such residence.

Those who go from the sea level to reside at altitudes of six thousand to seven thousand feet or more experience, on the other hand, increased profuseness in the menstrual flow, the external air pressure being greatly reduced. Of the influence of such reduced pressure upon the *change of life* except in prolonging its duration and increasing the frequency and profuseness of its hemorrhages, I am not prepared to speak. I know of no statistics bearing directly upon this subject, which is one of the many fruitful themes in climatology still awaiting investigation.

General Physical Condition.—The general condition of a woman has much to do with the inauguration of the *change of life* and with the events by which it may be characterized. Those who suffer with grave constitutional and visceral diseases which seriously impair their vitality are almost certain to experience an arrest of menstruation and often other symptoms which accompany the *change of life*. Those who suffer with tuberculosis, syphilis, general anemia, chronic diseases of the liver or kidneys, etc., are in this category. The acute wasting diseases sometimes produce so profound an impression that the menstrual function is entirely obliter-

ated. On the other hand, the malignant diseases of the genital organs, if present at a time when the *change of life* might be expected, cause its unlimited delay. I do not recall a case of such disease, in a very large experience, in which the *change of life* ensued after the malignant disease had begun its destructive career. In fibroid tumors of the uterus, especially those which are characterized with much discomfort and hemorrhage, it was formerly the custom to hold out the hope that all trouble would cease when the *change of life* brought its beneficent issue. In most cases this has proven the most unsatisfactory will-o'-the-wisp hunting by which a poor mortal could be deluded. The *change of life* again and again escapes the grasp, until finally it comes to mean that transformation which arrives for us all "when this mortal shall put on immortality."

The beneficent influence of modern gynecology has removed the veil of ignorance in regard to this subject, and the early removal of these tumors has alike brought on the *change of life* and the relief of many troublesome symptoms. The *change of life* comes quite early in women who become excessively fat. Such women are usually sterile. Their physical condition unfits them for the normal experiences of pregnancy and parturition, menstruation is infrequent, scanty, and painful, and it is not unusual for the *change of life* to occur within a few years of the appearance of the obese condition.

Surgical Procedures.—Certain surgical operations are conducted with the deliberate intention and purpose of bringing about the *change of life*. Such are all operations in which the ovaries are entirely removed. It is estimated that in ninety per cent. of cases of removal of the ovaries menstruation is at once arrested. If the uterus and Fallopian tubes are also removed the percentage in which such a result is obtained will be even greater. There are no other surgical procedures which act so directly to induce the *change of life* as does extirpation of the ovaries. Operations which may be followed by prolonged suppuration and invalidism by impairing the general nutrition and reducing vitality may result in arresting menstruation temporarily or permanently and in bringing about the premature appearance of the *change of life*.

Occupation.—Both a direct and an indirect influence may be exerted by occupation upon the subject which is under consideration. Such occupations as keep a woman in an elevated temperature during most of the day are very disturbing to the menstrual function, have a very decided tendency to produce obesity and may induce the *change of life* prematurely. Cooks, laundresses, and bakers are particularly subject to such influences. Other occupations which impair nutrition and vitality also disturb the menstrual function and hasten the *change of life*. Workers in chemical factories and laboratories upon arsenic, copper, lead, phosphorus, and other poisonous substances, workers in mines, cellars, in badly lighted, badly ventilated, and damp surroundings are included in this category. Other sufferers are those whose work is exhausting and unwomanly and predisposes to wrinkles and premature old age; such are fishwives, field workers, bearers of heavy burdens on the shoulders or head, mechanics' assistants who may carry tubs of mortar, casks of water or other heavy burdens, all these being types of laborers which one sees much more frequently among the laboring classes in Europe than in this country.

Excessive Fertility.—With many women the reserve capital of vital force is not large. Bearing children in rapid succession until five, six, or more have been borne in as many years exhausts that capital, and then follows the *change of life* while the woman is yet young. The reason for this is perfectly plain and is seen in the results which follow over-productiveness in animal or vegetable life wherever we may take the trouble to investigate it. Such a result can hardly be regarded as disease, but simply as the taking up of a certain amount of capital to which nothing remained to be added by way of replenishment.

Dissipation and Vice.—The number of women who lead irregular and vicious lives is so great that it would

seem as if important deductions might be made from the study of such lives. It has happened to my experience to see quite a large number of women of the vicious and depraved class of all ages. These women suffer greatly both with acute and chronic diseases of the pelvic organs; they frequently suffer with profuse hemorrhage from the uterus, and their excesses very often result in sterility, so that if the vicious life is followed by marriage, it is not likely to be a fruitful marriage. It has been a matter of surprise to me, again and again, that the excesses in sexual intercourse on the part of prostitutes and others do not arrest menstruation and bring on the *change of life*. Of course irregular habits, late hours, excesses in alcohol, etc., frequently break down the health, and the menses may be arrested as the result of anemia, etc., if the woman does not die promptly from exhaustion or some acute disease, as is the result with many. As a matter of fact I have seldom been called to record such an occurrence; indeed, the stimulation of the sexual organs and the careless, irresponsible life of many of these women seem to improve nutrition, and for a long time, at least, their physical condition is surprisingly good.

Phenomena and Duration.—There are certain phenomena which are almost invariable and others which are only occasional to the *change of life*. We must also remember that with some women the transition is immediate and without appreciable symptoms, except that the ordinary monthly flow abruptly ceases. The leading symptoms are practically the same whether the condition is the natural change or one which is induced by disease or surgical procedure. To those who experience it while still far removed from the usual period of time when it is to be expected, the symptoms may be exaggerated; but not necessarily so, for I have seen young girls go through this change with scarcely any discomfort or unusual happening.

Cessation of the Menstrual Flow.—The leading symptom is the disappearance of the regular monthly bloody discharge. This cessation may occur abruptly, the flow appearing one month, disappearing the next and never reappearing. This may be explained by the fact that physical maturity has been reached, just as the fruit falls from the tree when it is ripe; or it may be the result of disease, of removal of the ovaries, of intense emotion, etc. If the cessation of the menses occurs in young women, the possibility of its restoration in due season must be considered. Instead of an abrupt cessation the flow may reappear at regular or irregular intervals, two months, four months, six months or longer, finally ceasing altogether after one, two, or three years.

Excessive Flowing.—A very marked feature in some cases, when the flowing has become irregular, is its profuseness. It was formerly thought proper to do nothing for this symptom on the supposition that it was simply a natural discharge. I have striven diligently for years to combat this view. Excessive loss of blood is always unusual, abnormal, and should be investigated and arrested. The condition of the uterine mucous membrane usually calls for active treatment in such cases by the application of astringent substances to it or the removal of granulation tissue, which may be the cause of the hemorrhage, by the curette. Tumors and other disease of the uterus assume particular importance at this time, and one should never leave to the unaided efforts of nature the disposal of a burden at this time which she may be unable to dispose of or only with great risk to the patient's life.

Flushing and Other Vaso-Motor Disturbances.—Almost as common a symptom as the arrest or irregularity of the menses is the vaso-motor disturbance which occurs without warning many times a day until toward the end of the change, and is manifested now by flushing and heat, and now by pallor and chill. The experience of each paroxysm may continue but a moment, but it is annoying and in some cases depressing and weakening. What should cause this peculiar vaso-motor influence, now paralyzing and again stimulating the vascular system,

can be only a matter of conjecture. It is an experience which is so universal that it may be regarded as not far removed from the physiological. It is one of the first symptoms which occur, it continues two or three years, and by that time it has become endurable by its very frequency. With some women it continues uninterrupted to the end of life. It seems to make no difference whether the menopause is natural or induced as to the frequency and intensity of this symptom. It may be expected, however, that with those to whom the change comes early in life it will continue longer, as a rule, than with those to whom it comes as an entirely natural experience.

Mental and Nervous Phenomena.—One of the many notions concerning the *change of life* which formerly prevailed was that since it was a *critical* time all sorts of unpleasant things might be expected to develop in connection with it. If a woman became crazy at that time it was the *change of life* which did it, and it was more than likely that she would become crazy if she had any predisposition or predilection to mental instability.

The arrest of the menses and the disturbance of the blood tension undoubtedly may cause brain disorder in those who are predisposed to such trouble, and this may vary in its manifestation between headache and violent delirium terminating in mania or melancholia. Many women are *queer* or unusually hysterical at this time, neuralgias of all varieties are frequent, insomnia is not infrequent, and a disposition which has heretofore been amiable may be suddenly or gradually transformed into one to which the most unusual or grotesque desires or actions are possible. The outbursts in such cases should not all be attributed to the *change of life*, they are due in part to the previous inheritance of the individual and in part to the tissue changes which take place. Besides, the great majority of women have none of these experiences at all, so that they must be considered exceptional and not a customary accompaniment.

Changes in Nutrition.—Changes in nutrition are a noteworthy feature of this period, the active upbuilding time of life is over, and the tissues now and henceforth are less substantial. Muscular tissue tends to degenerate and atrophy, and fat is accumulated. This may lead to improvement in the general appearance and rounding of the figure, but it may also lead to grossness and obesity. Personal beauty is lost in some cases while an unusual attractiveness is acquired in others.

This period and the remaining years of life being the era of degeneration, it is not strange that cancer of the breast, the womb, and other genital organs should be found at this time more frequently than in earlier life. Cancer is not necessarily a feature or customary accompaniment of the *change of life*. This is a fact which I have insisted upon for years in spite of a prevalent opinion to the contrary, both in the profession and in the laity. It frequently coexists simply because the *change of life* stands at the entrance of the degenerative period. We look for cancer in men in its greatest frequency at the same period of life that we look for it in women; the ending of the child-bearing period and the cessation of the menses must therefore have little to do with the development of malignant disease.

Disturbances in Various Organs of the Body.—These have been frequently noted, and in a book which was written by me upon this subject ("The Menopause," D. Appleton and Co., 1897) various complicating affections have been alluded to. It has always seemed to me very necessary that one should carefully distinguish those complications which merely coexist from those which cause or are caused by the *change of life*. Dimness of vision has been reported as an accompaniment in many cases, also liver engorgement or other derangements in efficient working power of the kidneys and urinary bladder, loss of appetite, indigestion and constipation, rapid action of the heart and dyspnoea. These, it will be observed, are all functional disturbances, and it is such rather than organic lesions of which the *change of life* is most likely to be the cause.

Impregnation after the Change of Life has Occurred.—The question is an interesting one, and it has often been asked whether impregnation could occur after the menstrual flow had entirely ceased. This question may be regarded as entirely settled, indeed it may be said that impregnation has very little to do with the menstrual flow or the menstrual flow with it. It is said that the Esquimaux women are impregnated customarily before the menses have appeared. Many instances have been observed in which a similar event has occurred in our own latitude before the appearance of the menses. The facts in regard to impregnation after the menses have ceased and the *change of life* has been concluded are equally authentic and definite. It is not usual for such an event to occur, but it does occur occasionally. It is believed that the ovaries continue their functional activity from the beginning till the end of life, and in not a few instances pregnancy has taken place many years after it was supposed the child-bearing function had ended. I am personally familiar with cases in which this interval has been ten to fifteen years, women from fifty to fifty-five years of age giving birth to healthy children. Equally strange are those cases in which pregnancy occurs when both ovaries have been removed. I know of two such cases reported by reputable and talented men. Either the ovaries were not entirely removed, or there was a supernumerary ovary, or there was some hidden cause which cannot be explained.

Andrew F. Currier.

CHANNEL ISLANDS. See Guernsey.

CHARCOAL.—The essential constituent of charcoal is the element carbon, which, as it occurs in charcoal, presents itself as a black substance, insoluble, infusible, odorless and tasteless. The medicinal virtues of carbon reside solely in the singular absorbent property of this element. As represented by the substance charcoal, carbon tends strongly to absorb and hold fast gases and many organic principles, notably alkaloids and odorous and coloring matters. And in the case of such of these bodies as are oxidizable, the fact of their retention in the meshes of the charcoal mass leads to their ultimate chemical transformation by oxidation. Charcoal thus operates indirectly as an oxidizing agent, and thus is practically available as a decolorizer, deodorizer, detergent, and, so far as noxious products of zymotic processes are concerned, also as a disinfectant. Charcoal is used by the pharmacist to decolorize and to separate organic principles, and by the physician to deodorize and hasten oxidation in the contents of receptacles for excreta, to deodorize foul discharges, and, given internally, to absorb and hold the substance of vegetable poisons, such as alkaloids, until their evacuation can be determined, and, by absorption and secondary chemical conversion, to dispose of the noxious products, fluid and gaseous, of fermentation of the ingesta in a dyspeptic stomach.

Charcoal is official in the United States Pharmacopœia in the following forms:

Carbo Animalis, Animal Charcoal. Under this title is recognized the common so-called animal charcoal or *bone-black*, that is derived as a black pulverulent residue from the heating of bone to redness in a closed vessel. Animal charcoal occurs in "dull black, granular fragments, or a dull black powder, odorless, nearly tasteless, and insoluble in water or alcohol. When ignited, it leaves a grayish or yellowish-white ash, amounting to about eighty-five per cent. of the original weight of the portion taken" (U. S. P.).

Animal charcoal is official as the basis for the following preparation:

Carbo Animalis Purificatus, Purified Animal Charcoal. Animal charcoal, in No. 60 powder, is digested with diluted hydrochloric acid on a water-bath for many hours, and the undissolved residue then freed from the acid by thorough washing with water, dried, and put up in well-stoppered bottles. By this procedure the calcic salts, which form so large a proportion of the weight of crude

animal charcoal, are dissolved out, and the carbon is thereby obtained practically pure. Purified animal charcoal is "a dull black powder, odorless, tasteless, and insoluble in water, alcohol, or other solvents" (U. S. P.).

Probably because of a peculiarity of its texture, animal charcoal decidedly surpasses wood charcoal in the property of decolorizing and of separating and holding vegetable principles. It is, therefore, the form of charcoal most used by the pharmacist, and should be selected also by the physician where the purpose is to withhold swallowed vegetable poisons from absorption. But in this application it should be remembered that the action of the charcoal is, so to speak, mechanical only, and the use of the same, therefore, should be merely accessory to measures to secure evacuation. The charcoal should be given freely, by the spoonful, in suspension in water, until from half a tumblerful to a tumblerful shall have been taken.

Carbo Ligni, Charcoal. Under this title is recognized officially "charcoal prepared from soft wood and very finely powdered." When well prepared, wood charcoal contains but a very small percentage of mineral matter, and, therefore, may be regarded as practically all carbon. For medical purposes it is pulverized, and yields an exceedingly fine, light, black powder, odorless, tasteless, and insoluble. Upon exposure it attracts moisture, and it is in best condition, therefore, when freshly made. It should be kept in tightly closed receptacles.

Wood charcoal possesses in high degree the property of absorbing gases of certain kinds, and notably the foul-smelling products of zymotic processes. For deodorizing purposes it may be relied upon to absorb and effect the decomposition of from fifteen to twenty times its bulk of gas. It thus makes a good application to privy vaults or cesspools, a pailful of powdered charcoal, as freshly made and as well preserved from damp as possible, being thrown into the receptacle once or twice a week. To wounds or sores yielding offensive discharges charcoal may be applied by dusting upon the surface, by strewing upon the face of a poultice, or by quilting the powder between two layers of cotton wadding, such quilt being then used as the wound dressing. In dyspepsia, with acidity and flatulence, relief often may be secured by administering powdered charcoal in quantities ranging from half a teaspoonful to a tablespoonful. It should be, if possible, freshly made, and is more effective if taken dry. Otherwise it is given mixed with water or milk. Charcoal should not be taken in large doses too frequently, for under such circumstances considerable mechanical irritation has been known to follow. In mild dyspeptic cases, quite small doses, such as from 0.12-0.30 gm. (gr. ij-v.) may be all-sufficient, and such quantities may be taken without objection.

A sample of charcoal that has lost potency by keeping recovers the same on being recalcined.

Edward Curtis.

CHARLESTON, S. C.—A city of 65,000 inhabitants, and one of the chief seaports of the South, situated upon a point of land between the mouths of the Ashley and Cooper rivers, several miles from the Atlantic Ocean. It is an attractive, old-fashioned town, with rich vegetation of a more or less semi-tropical nature. It is a convenient and interesting place to spend some time in, on one's way north from the more Southern resorts, especially in the spring. The magnolia gardens in the vicinity are most interesting and well worthy of a visit. Indeed, both by water and land the excursions are many and attractive. The writer recalls very vividly the delight of a visit here in the spring when returning from Florida. The mild balmy atmosphere, the profusion of roses, the jasmine, the strawberries, the quaint and attractive streets and residences, and the numerous excursions, were a constant source of pleasure.

As will be seen from the climatic table, the winter and spring climate is a mild, equable, marine one. The proximity of the sea renders the relative humidity greater than at the resorts farther inland; hence this is not a

favorable climate for a permanent residence for the consumptive.

CLIMATE OF CHARLESTON, S. C. LATITUDE, 32° 47'; LONGITUDE, 79° 56'. PERIOD OF OBSERVATION, 12 YEARS 10 MONTHS.

Data.	January.	March.	July.	November.	Year.
Temperature (Fahr.)—					
Average or normal.....	49.5°	57.8°	82.8°	57.2°	65.9°
Average daily range.....	14.6	15	14.1	14.1	
Mean of warmest.....	58.4	67.1	90.2	65	
Mean of coldest.....	43.8	52.1	76.1	50.9	
Highest or maximum....	80	85	104	82	
Lowest or minimum....	23	28	67	28	
Humidity—					
Average relative.....	75.4%	69.6%	74.3%	74.7%	73.8%
Precipitation—					
Average in inches.....	3.77	4.47	7.18	3.51	59.9
Wind—					
Prevailing direction....	N.	S.W.	S.W.	N.E.	S.W.
Average hourly velocity in miles.....	7.3	8.8	7.7	7.5	7.9
Weather—					
Average number of clear days.....	9.5	12.7	10.4	11.5	134
Average number of fair days.....	10.5	10.8	14.6	10.5	140.3
Average number of clear and fair days.....	20	23.5	25	22	274.3

Edward O. Otis.

CHARLESTON ARTESIAN WELLS.—Charleston County, South Carolina.

POST-OFFICE.—Charleston. Several artesian wells in the city of Charleston have been found to be impregnated with mineral ingredients. Those mentioned in the Geological Reports are the "Old Artesian Well," the "Citadel Green Well," the "Commercial Cotton Press Well," and "Chisholm's Mill Well." We introduce the following analysis of the first of these, made in 1868 by Dr. C. U. Shepherd, Jr.:

OLD ARTESIAN WELL.

ONE UNITED STATES GALLON CONTAINS:

Solids.	Grains.
Sodium bicarbonate.....	71.06
Calcium bicarbonate.....	.12
Magnesium bicarbonate.....	.02
Sodium chloride.....	63.38
Silica.....	Trace.
Organic matter.....	Trace.
Iron oxide.....	Trace.
Aluminum oxide.....	.79
Carbolic acid.....	Trace.
	135.37

This water has a temperature of 87° F., and is therefore a thermal. The well is 1,250 feet deep, and the flow of water is estimated at 1,200 gallons per hour. The Commercial Cotton Press Well contains a considerable proportion of sulphate of magnesium.

James K. Crook.

CHATTOLANEE SPRINGS.—Baltimore County, Maryland.

POST-OFFICE.—Chattolance. Hotel. Access.—Via Northern Central Railroad from Baltimore, 33 miles.

These springs are delightfully located in the Green Springs Valley. They are six in number and yield 1,500,000 gallons of water daily. The waters are not strongly mineralized, but are quite remarkable for their great purity and freedom from organic matter. The following analysis was made by Messrs. Lehman and Mager, of Baltimore:

ONE UNITED STATES GALLON CONTAINS:

Solids.	Grains.
Magnesium carbonate.....	1.81
Calcium carbonate.....	4.62
Magnesium chloride.....	.21

