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Cloud Stacks



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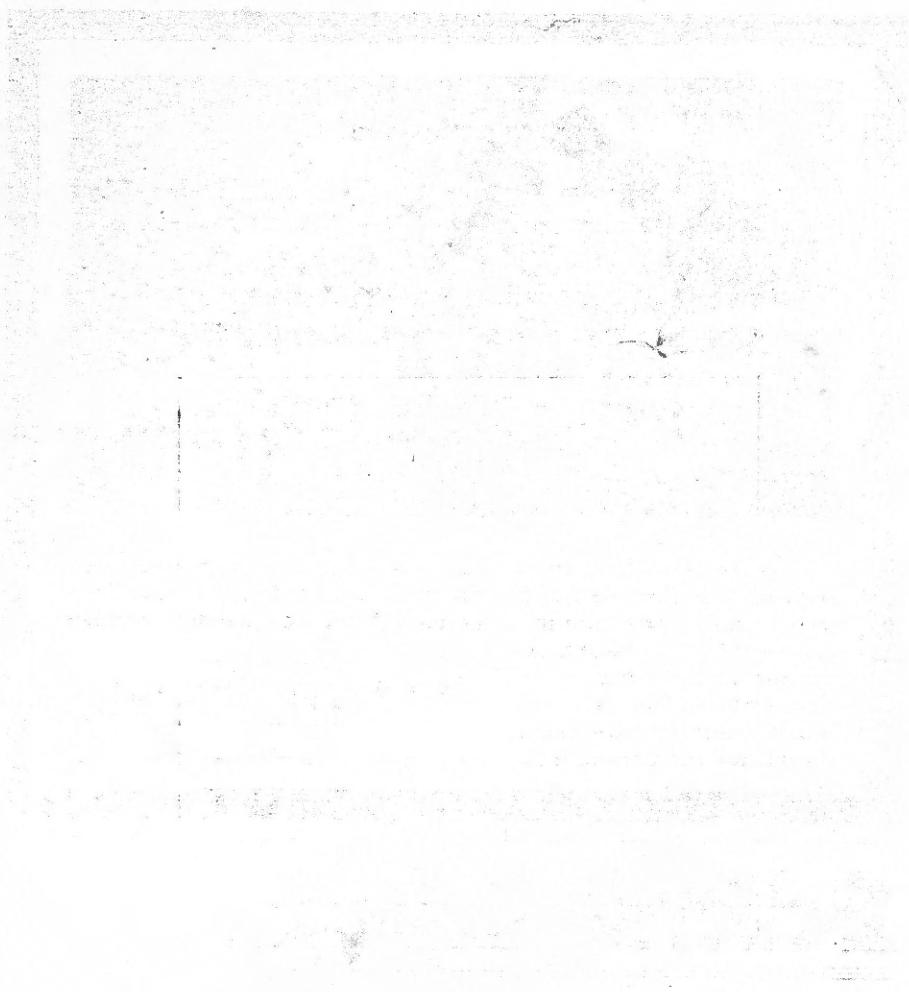
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Professor of Materia Medica and Therapeutics,  
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# The O. M. C. Pulse.

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NUMBER 6

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## IMPORTANCE OF OBJECTIVE SIGNS.

W. H. CHRISTIE, M. D.

The modern methods of investigation and conducting clinical examinations to determine pathological developments, or physiological modifications and perversions determining the diagnosis of disease and the probable prognosis as well as the treatment, by the physical examination of the individual by percussion, auscultation, the use of the fever thermometer and the microscopical examination of blood, sputum and urine and the chemical examination of the same have set in the background by the medical student the importance of objective symptoms that our fathers depended upon largely and which were to them the principle guides and which the modern practitioner must largely learn by close observation and large experience and study at the bedside as so little is now taught concerning their importance, relative to physical signs. Among these may be found the carriage of the individual, the attitude he may assume in either the sitting or recumbent posture, the hue, shriveled or puffed integument, the color of the sclerotica, the expression of the countenance, including the eyes, the feel of the skin, whether dry, hot, moist, clammy, cool and even cold, or whether the extremities be cold while the head, thorax or abdomen may be hot. The tongue, Aesop declared you know might be the best of dishes. So it may be one of the best of indexes as to conditions of the alimentary tract and organs pouring their secretions and excretions into it and clearly point to the proper therapeutic measures to adopt for their correction.



The pulse arises to the dignity of being the best guide to treatment as well as aiding us in diagnosis and being the superlative index of prognosis. In fact these objective symptoms taken collectively are of more importance than physical diagnosis in determining treatment and diagnosis as to the true condition of the patient. We may be able to label a disease by the latter, but we have not yet learned fully what is the matter with our patient. To illustrate; we may be summoned to the bedside of a patient suffering greatly. He lies semi-recumbent on his right side perhaps with agony upon his countenance, the alae nasi distended, a fixed, haggard, anxious countenance, his face blanched or white about the mouth and cheeks with a little reddening. You notice his respiration is rapid, from 40 to 60, according to his age, and extremely shallow. His hands may be cool and so his extremities. His head is hot, thorax and abdomen if the hand rests a while, at first it may not appear so. His tongue may be broad and heavily furred with a moist, creamy coat or dry and darker in the center, depending upon whether he breathes through his mouth or not. If he does he dries his tongue. You now examine the pulse. You find it rapid, quick, small, hard and not compressible, running from 110 to 160 perhaps; according to the age of the patient. You take his temperature and you find it may range from 101 to 104 degrees or higher. You percuss his chest. You may find by percussion modified resonance, it being duller than natural, all the way from a slight dullness, which may be general or partial, to flatness. Auscultation gives you sibilant rales, some tubular breathing, crepitant rales and a friction sound on the side he prefers to lie upon. You say he has a double pneumonia with pleurisy on the right side and bronchitis. Do all the physical signs tell you all what is the matter? No, nor do they suggest the treatment except you be an empiricist or routinist. Such a condition of the countenance not only indicates pain but an agony characteristic of the embarrassment of the circulation and respiration

known as depression of them. The tongue plainly says there is engorgement in the portal circulation. The pulse says the arteries are contracted, vaso motor over-stimulation or irritation. The period of diastole is short. The quick snappy systole denotes irritability and depression of the heart. This irritability comes from the secondary effect of the disease upon the nervous system. It is these symptoms that guide us in the treatment and prognosis always. True, they may be caused from the fever and a condition similar to shock from the pain, but the pulse tells us where our patient is at. Such a condition in the early stages of pneumonia augurs ill. In this brief article I shall not have time to take up and consider all objective symptoms, but let us consider the pulse.

The pulse is the impulse of an artery under our fingers which corresponds to the systole of the left ventricle. Its character will first depend upon the condition and action of the heart and second upon the condition of the blood vessels which condition depends largely upon the vaso motor nerves and they may be acted upon by the influence of the cerebro-spinal nervous system and these by moral impressions or by the physical shock, the character of the blood that feeds the cells of the nervous system, both the sympathetic and the cerebro-spinal. The condition of the blood may be toxic from excrementitious matter, the result of metabolism, which is always essential to life, from the acquirement of toxins the alkaloidal product of bacterial life which has invaded the system, or from a normal inability or depressing environment the system is no longer able to destroy the invaders of its citadel or hurl them from its battlements. It becomes invested with them and worst of all their products until they have accumulated in such quantities that it destroys their own origin or source. During this period of the invasion, the rise and fall of bacteriological disease with these objective symptoms, we watch the warfare and by timely succor assist dame nature by therapeutic infantry, flying dragoons and light and heavy artil-



lery as the occasion may demand. The principle holds whether the cause of the modified physiological function be other than bacteria. Shock, physical or moral may, through the nervous system cause disease; for example, the heart may be brought to a standstill and life be snuffed out as the snuffing of a candle or may so modify circulation and through it cut off the supplies to the centers regulating and stimulating organs engaged in carrying on organic life, that life is in a balance. The therapist holds the key to the situation. He may aid or embarrass nature by his methods.

The pulse now is his strong right arm that tells him how the central nerve stations are that seem to send dynamical energies to these important organs and send out the signal by the pulse what is the condition. And by the knowledge of the physiological actions of agents we are enabled to select what will aid nature in her distress. Not only so, but disease of remote parts of the body may tell upon nutrition and in this manner the heart begins to suffer and finally may fail, and hence so many death certificates due to heart failure. The failing heart early throws out through the pulse the flag of distress and the intelligent physician promptly tries to aid it.

Now what about it? The pulse may be frequent, or rapid, or infrequent, large or small, slow or quick, compressible or non-compressible, regular or irregular or intermittent, and combinations of these. The rapid pulse and the frequent pulse are synonymous terms, frequent within a given period of time—generally considered as one minute—with a steady rythm where the interval between impulses preserves the length to impulse as in health. Conditions that favor its rapidity may be fever as seen in ptomaine poisoning from any pathogenic germ, debility from any cause, excitement and do not forget hysteria. The history, the cause of the fever will enable one to consider the import of the rapid action, i. e., if it is an hysterical individual when a more serious acute disease overtakes the patient the quick pulse

of hysteria will subside and gradually as the fever continues will the pulse become more rapid. Then when there is irritation to the nervous system the interval between the beats is prolonged and the pulse wave is shortened. Excitement will produce a similar pulse, a quick pulse, but it subsides when excitement ends. Now a large pulse is one that is fuller than natural and when it is of less volume it is said to be small.

In fevers the pulse is more rapid in proportion to the temperature as a rule, but when the fever causes the pulse to be more frequent and the temperature is not proportionately advanced it means a weakened heart and this organ through the pulse calls for aid. It further admonishes us against the use of antipyretics that depress the cardiac center such as the coal tar products, aconite and veratrum viride. While the body heat from the fever is causing depression it calls for reduction of it to conserve the nerve forces that carry on the organs of lower animal life and that must be accomplished by the abstraction of heat by baths, sponge, immersion, the wet pack or cold normal salt enemas. The pulse too well tells us whether we can use immersion bath or not. When very quick and small the patient's heart is weak and will not react after the shock of the cold bath and milder measures shall have to be substituted for the reduction of the heat. In fevers a pulse of 120 in adults is a signal of approaching danger 130 to 140 very grave, from that to 160 almost sure death. The failing heart is the cause. Strychnia, digitalis if the temperature is not over 102, strophanthus, caffeine, sparteine are called for. In scarlet fever the pulse will be much quickened and is not so alarming as in the essential fevers. Rheumatic fever, on the other hand, with a pulse of 120 is of the gravest indication unless there be pericarditis which will embarrass the heart, cause the pulse to weaken, when the heart muscle itself may be in a fairly good condition. There is not the grave alarm from quickened pulse from this cause if the other symptoms do not correspond as from the quickened pulse without this compli-

cation. The frequent pulse means grave cardiac depression in rheumatic fevers. On the other hand as long as the pulse in fevers maintains a rate approximating the frequency in health we need have no alarm. As when infrequently in typhoid fever it suddenly becomes very rapid, quick and thready we suspect perforation, justly, at once.

Again, the heart may propel blood less energetically, a less volume accumulates during shortened diastole and contributes toward the soft pulse. The vaso motor tension of the vessels being diminished this condition of the pulse is increased and it comes up under the fingers less full and we have the readily compressible pulse. The blood now readily passes into the veins, there is diminished arterial tension. This relaxed condition of the vessels causes the vessels to be large and full if the heart is not too weak. Now this large full condition of the vessels might mislead one as to the condition of the circulation did he not take the compressibility. If the condition continues to progress less blood will be thrown into the vessel from the increased weakness of the heart and with less time in diastole to accumulate if the pulse soon becomes small, soft and compressible and this may continue until it becomes so small that it is like a thread and hence the thready pulse. And now the rapid pulse becomes quick from a sudden sharp effort of the heart to do its work. This indicates grave weakness of it. Therefore the more frequent the pulse the more compressible and the smaller, the greater the cardiac weakness, the greater the need of cardiac stimulants and tonics. Strychnia, strophanthus, alcohol, are each good alone or combined.

Then again we may find the general strength of the patient good. He may be able to sit up and walk, his voice strong yet his pulse frequent and very compressible. Such cases should not be allowed to compel the heart by its action to overcome the laws of gravity by raising the column of blood to the brain for by doing so we cause the brain to be poorly nourished and the car-

diac nerve centers become starved and we increase the tendency to failure of nerve supply to the heart and heart failure soon overtakes our patient. This may happen in people who naturally have a small compressible pulse and in disease and in alcoholics sometimes and in cases of diphtheria. Such early call for heart tonics and cardiac and arterial stimulants, besides the maintaining of the recumbent posture. In all cases of marked nervous excitement and cerebral irritation, where the pulse may be good at the outset, the fact that ultimately the nervous centers may give way and the pulse suddenly become frequent, small, wiry and compressible and sometimes through this irritation the sympathetics and vasomotors are stimulated and cause contraction to the arterioles and the heart is compelled to waste its energies against a resisting column of blood and hasten its exhaustion in its efforts and thus hasten heart failure.

The intermittent pulse may or may not be of serious importance. Some people have an idiosyncrasy to such a pulse without organic lesion of the heart. Malaria, indigestion, laborious efforts, portal congestion or what is commonly known as biliousness may cause intermittency of the pulse in some individuals, and it may follow after acute febrile attacks of a prolonged character and frequently in the aged and feeble. While this idiosyncrasy is not of moment ordinarily still such a heart will fail earlier than one not so characterized during fevers, inflammation and shock. Intermittency, however, in organic lesions of the heart is of more serious import.

Irregularity of the pulse is of more serious import than an intermittent one. This occurrence is present in mitral lesions of the heart and when so associated is of grave importance. Hypertrophy of the ventricle with dilatation having irregularity of a marked character is a very grave indication. Irregularity has been called a mitral pulse. It calls for cardiac tonics. In mitral insufficiency or stenosis with hypertrophy and dilatation where the pulse does not improve under heart tonics the proba-



bilities are that there is a degenerative condition of the heart muscle. Irregularity of the pulse wave is characteristic of some diseases, especially in children, as in tubercular meningitis, and is a diagnostic guide in connection of course with the history of the case.

The condition of the vessels that have led to the compressible pulse, namely, relaxation—vaso motor depression—leads to dicrotism. The secondary wave of the pulse becomes greatly exaggerated and the pulse wave has been mistaken for two and twice the number been accredited to the pulse that really existed. The dicrotic pulse then means great weakness of the vessels but not always of the heart. If frequency is associated with the dicrotic pulse then we have a weakened heart and relaxed vessels. This pulse occurs in typhoid fever. Strychnia as a vaso motor tonic should be given early. If the fever is high digitalis would do no good, because the cardiac centers in the floor of the fourth ventricle and medulla are in a state of paresis from the hyperpyrexia and there would be no response to its physiological action, and if increased to obtain its full effects it would increase the paresis of these centers. Alcohol has been suggested, but this is a depressent to the vaso motors after the reflex irritation that its local irritation to the mouth, fauces, oesophagus and stomach have subsided, and hence we should expect no benefit.

The non-compressible pulse is one that is hard, unyielding and the pulse wave itself is not so easily felt as the compressible. Although the artery itself may seem lifted from its bed upon each contraction of the heart. The pulse is as a rigid inelastic tube more than the normal, yielding vessel. Because of this rigidity there is little dilatation and the elastic impulse is indistinct. We have this in sthenic fevers, especially during the rigors. After the rigor comes the fever, the pulse becomes fuller, the heart is not weakened yet, and it is not compressible, but it is said to be bounding, hard, full and bounding. It is now too called long, but later as the fever is prolonged it becomes compressible,

frequent, quick, short and dicrotic. During the non-compressible period of the pulse in fevers of the sthenic type the skin will be hot, harsh and dry, but when diaphoresis is once established as well as diuresis it becomes more soft, large and compressible. Malaria and rheumatism and pneumonia illustrate this or in the early stage of the sthenic type of these we find this condition—of the hard bounding pulse—the blood does not readily pass from the arterioles through the capillaries into the veins. Arterial sedatives as aconite, veratrum the coal tar antipyretics and salicylates, diuretics, cathartics and the lancet will relieve this condition. The nervous system may by vaso motor stimulation and contraction cause the non-compressible pulse. The contraction of the coronary artery may cause starvation of the cardiac muscle and calls for the nitrites and anodynes of an antispasmodic character.

Drugs, as ergot, lead poisoning, gallic acid and such diseases as jaundice, gout and kidney disease, especially the contracted kidney, may cause such a pulse and hence the term kidney pulse. Fibroid and calcareous degeneration of blood vessels may cause the incompressible pulse. It may not always be large, but it is hard and incompressible under the fingers and may be small and slow. These conditions of degeneration are grave as they lead to apoplexy when of the vessels in the brain. Again high arterial tension with hypertrophy of the heart with a large secretion of water and a small amount of albumin points to contracted kidney in Bright's disease, which means there is and has been interstitial nephritis, while the simple albumenoid kidney without these characteristics of the pulse does not indicate so serious a condition of these organs. The non-compressible pulse does not per se indicate so much weakness of the heart as the yielding one—but here again the frequency is of importance and if now it is frequent then there will be corresponding heart weakness.

The hardness due to fibroid and calcareous degeneration

calls for an abstemious non-nitrogenous food and medicaments to take up and remove earthy deposits in the vessels as the alkalis lithia, potassium and sodium salts and waters containing them for beverages and the avoidance of all irritants in the blood as alcoholic irritants of ever so mild forms.

The so-called shotty pulse is one that needs some consideration. It is one that is found under certain conditions in connection with aortic regurgitation. In this lesion the pulsation is visible in the arteries of the head, neck, in the carotid and temporal arteries. It may be seen in the distribution of the radial at the wrist, when the arm is raised above the head. This is caused by the empty condition of the vessels during diastole. Arterial tension being low, from the relaxed condition of the arteries, when the heart contracts the pulsation is seen in the flacid empty tubes. The pulse is said to be of two kinds or depending upon two conditions; first the amount of the regurgitation and second upon the strength of the heart. Upon the contraction of the heart the wave of the pulse will gradually rise until the crest of the wave is reached and then suddenly drop. The wave of the pulse might be likened to the hypotenuse and perpendicular of a right angle triangle were we to trace it. When the case is farther advanced instead of the steady rise of the wave of the pulse it will be commenced with a marked suddenness and gives to the fingers a sudden jar. This means weakness of heart with regurgitation. In more advanced cases with several fingers on the artery and with graduated pressure, i. e., with the distal finger more firmly placed than the next and the proximal less firmly than either of the others, in these cases of weakness of the heart and regurgitation, there will be the sensation of a chain of round bodies passing under them during the pulsations and hence the shotty pulse. These characteristics of the pulse when detected early, much can be done for the patient by advise, if followed, by instructing him never to rise up suddenly and when bad to assume a recumbent posture, and when bad even to void the urine

in the same position as the emptying of the bladder creates a vacuum in the abdomen and this removal of pressure from the vessels in the abdomen will invite blood to them instead of going to the head and should the patient be erect, it might rob the vessels of the brain completely and cause syncope, from which the patient might not be resuscitated. The administration of digitalis in such cases but aggravates this tendency and especially when compensatory hypertrophy may be fairly good. The cause being that you have both ends of the arterial tubes now open and during diastole they may become entirely empty—complete or nearly so—ischaemia will be present and as digitalis prolongs diastole greater time to empty the arteries will have been obtained, hence the greater dangers to syncope. Digitalis, strophanthus, spartein and strychnia may be given in advanced cases except where beside the aortic insufficiency there may be fatty degeneration of heart or fibroid or calcareous degeneration of the blood vessels.

These visible pulsations are not always due to aortic insufficiency but may be due to degeneration of the arteries and high tension of the same may cause visible pulsation of the carotid, radial and brachial arteries, but will not be so high upon the neck as in aortic visible pulsation. Both conditions may be present, however, in the same subject, both being due in many instances, to the same causes, age, strain, prolonged, following an excited laborious life and too great indulgence in albumenized food and spirits and too little exercise. The differentiation as to which may cause the visible pulsation between aortic lesion and degeneration, is the tortuous pulsation in the degenerated vessels while it is absent in aortic lesion. In aortic obstruction there will be hypertrophy and the pulse is slow, small, not frequent and generally hard. Because of the hypertrophy it can force the blood through and systole is therefore long, but when compensation fails then it becomes compressible and frequent. In mitral obstruction the pulse is irregular, it may be frequent, but will be small and compressible and is a bad omen when very quick.



# The O. M. C. Pulse.

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Number 6.

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## Editorial.

THE PULSE presents in this number the photo of Dr. W. H. Christie, professor of materia medica and therapeutics. The Doctor contributes an able article on objective symptoms, of which he has made a careful study through years of observation of what appears to be little things. The article is an illustration of the value of paying attention to little things and how really great they are. For three years the Doctor impresses the student with the importance of detail which may at first look superfluous and troublesome, but soon clears up under the enthusiasm of Dr. Christie and that which he creates in the student to make his fourth year smooth sailing.

Dr. W. F. Milroy read a paper before the Southeastern Nebraska Medical Association at Tecumseh, March 29, on the subject of Pneumonia—Its Diagnosis and Treatment. The Doctor also recently addressed the training class and employes of the Institute for Feeble Minded at Glenwood on the subject of Sanitary Science. Those who heard Dr. Mogridge's address at the college last month and saw the patient he presented as having a phenomenal memory for dates might be interested to know that this man on seeing Dr. Milroy enter the institute approached him with the surprising statement of the day and date in 1898 that he lectured in Glenwood. On looking this up the Doctor found it to be correct.

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The following papers appeared on the program of the Medical Society of the Missouri Valley: "Dangers of Nature's Cure for Senile Cataract," by H. Gifford, M. D.; "Report of a Case of Congenital Absence of Vagina," by Donald Macrae, Jr., M. D.; "Bilateral Nephrorrhaphy and Operation for Appendicitis," by J. Cameron Anderson, M. D.; "Report of Perforating Ulcer of Duodenum," by J. E. Summers, Jr., M. D.

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Dr. W. O. Bridges has recovered sufficiently from his injuries to meet his classes regularly and conduct a weekly clinic at the Douglas County hospital.

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Superintendent Dawes of the Nebraska School for the Deaf asks THE PULSE to publish in part a letter written in the interests of the school and of such deaf persons as are not availing themselves of the opportunity of a free education. The state provides education as freely to the deaf as to the hearing. Reports indicate that there are in Nebraska a large number of deaf children

not in school and who are growing up in ignorance. It is the desire of the management to bring into the institution every deaf or dumb boy or girl that may be entitled to the benefit of an education there. The institute is situated on spacious grounds in the northwest part of the city.

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Commencement exercises will be held at Boyd's theatre on the afternoon of Thursday, May 3rd, at half past two o'clock. Dr. H. B. Ward of the University of Nebraska, will make the commencement address. Rev. E. H. Jenks of the First Presbyterian church, Dr. D. R. Kerr, president of the University of Omaha, Dr. H. Gifford, president of the board of trustees, and Dr. A. F. Jonas, dean of the faculty, will participate in the exercises. The Boyd's theatre orchestra will give a musical program and arrangements are being made for vocal music by the O. M. C. Glee Club. The class of '00 will be graduated in public in accordance with the custom previous to '98, in order that friends of the class and of the O. M. C. may be present. This will no doubt satisfy more people than the arrangements of the last two years and seems to be the universal custom among medical colleges.

On the evening of May 3rd, the faculty will banquet the graduating class and alumni. It is urged that all alumni who possibly can will be present. Indications are that there will be a good attendance as there have been numerous inquiries. If a sufficient number are in attendance a business meeting of alumni will be advisable, that organization may be further completed.

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Dr. A. O. Peterson, class of '99, has given *THE PULSE* the results of some original investigation in embryology. The Doctor will get his master degree at the State University this spring. Upon completing his term of service at the Immanuel hospital he will go to Baltimore and New York for post graduate work.

SOME EARLY OBSERVATIONS ON THE DEVELOPMENT OF THE LIVER IN *SUS SCROFA DOMESTICUS*.

A. O. PETERSEN, M. D.

Through all ages the observing mind has been attempting to unravel the mysteries surrounding the embryological development of the individual. The Greeks believed in spontaneous generation. Harvey following Aristotle, conceived development as a process of epigenesis.

For a hundred years after the time of Harvey the doctrine of preformation flourished. The adherents of this theory conceived the ovum as containing the embryo in miniature and development consisted simply in the growth or unfolding of already formed parts. This theory implied the preformation not only of the immediate, but all subsequent offspring, and its votaries were able to compute that the ovary of Eve contained 200,000 millions of human germs.

In 1759 Wolff led the way in a return to the teachings of Harvey and epigenesis, the foundation of modern embryology, was established. But it was reserved for Schwann in 1839 to reveal that the ovum was a single cell and that in it was contained the heritage of the species.

Embryology may be termed a foundation. A knowledge of it is necessary to an accurate conception of the anatomy of the various organs of the body. And, just as dissection is essential to an intelligent understanding of anatomy so is the practical laboratory work a necessity for the comprehension of the steps in development. The scientific therapist, and the experimental physiologist in the embryological development of the individual find an explanation of many of its various phenomena.

As producing a link in the chain of evidence of organic evolution, embryology is particularly instructive. It is an em-



bryological principle that the higher types pass through stages during their development that are permanent in some of the forms below them in the scale of evolution. The single hepatic diverticulum of amphioxus and the compound tubular hepatic gland of Reptilia correspond to stages in the development of the liver of pig.

Embryological material occurs in abundance, Aves, Reptilia, Pisces and Amphibia contributing the most. In the higher vertebrates, and in man particularly, the difficulty of securing the earliest stages is obviously increased. As, in man, but few observations have been made on embryos of less than 16 or 18 days, our knowledge of the very earliest processes of human development is certainly indefinite. However, vertebrates develop along a broad general type, there being an agreement of certain essential facts. Reasoning from analogy, development, as found in animals, will fill the gaps in our knowledge of human embryology. Accepting this principle I have made the following observations in the development of the liver in pig.

In porcine embryo of 12 mesoblastic somites at a point in the entoderm of the fore-gut where it passes around the favea cardiaca on its way to the extra embryonic region, there occurs a thickened strip of cells. This represents the primitive anlage of the liver.

The cells of this anlage early show differentiation, become wedge-shaped and larger than the columnar cells of the gut entoderm.

With the separation of the embryo from the yolk-sac and the closure of the Darmnabel, this proliferated strip of entoderm is converted into a ventrally situated evagination of the gut wall. It will be observed that this single evagination is formed, not so much by a growth outward of the entoderm as by a retention downward of the primitive anlage. The evagination is cranially

directed and extends between the folds of the ventral mesentery directly into the primitive diaphragm from which it is as yet sharply defined.

The wall of this diverticulum thickens and particularly so in its upper two-thirds which, in further development, becomes hepatic tissue, the lower thinner part never forms liver tissue, but is gradually converted into the gall bladder and cystic duct. These two parts correspond respectively to the "Pars Hepatica" and the "Pars Cystica" of Brachet.

The dorsal part of the primitive diaphragm just ventral to the intestine contains a mass of young connective tissues particularly rich in vessels and cells. This part is termed the pre-hepaticus as into it the developing liver extends.

By the unequal growth of the primitive hepatic diverticulum and the anterior bending of the cephalic and caudal ends of the embryo two secondary diverticulae of the ventral gut wall appear the one above and the other below the original diverticulum. Coincident with these changes a progressive antero-posterior pinching off of the hepatic anlage occurs so that at this stage the three diverticulae are connected with the intestine by a broad stalk "der Leberstiel." This stalk becomes the ductus communis of adult life and into it the three diverticulae empty.

The wall of the hepatic anlage has now become quite thickened and is in close proximity to the sinus venosus. There is a marked transition from the spindle-shaped oval nucleated cells lying adjacent to the lumen of the intestine to the polyhedral round-nucleated cells constituting the mass of the anlage.

Throughout this cell mass, termed "der kompakte Leber anlage" of His, the cells so arrange themselves as to form columns or cylinders. By the outward growth of these cylinders the anlage becomes converted into a mass of solid tubules extending in various directions.

As these tubules extend farther into the transverse septum they come in contact with the vitelline and umbilical veins and,

pushing these vessels before them, they become covered with a vascular epithelium which becomes the inter-trabecular vascular system and also gives rise to the connective tissue of the adult organ. With an increase in size, the primitive hepatic tubules acquire a lumen. However, with the penetration of the tubules by a system of small vessels termed the intra-trabecular network and the consequent formation of cell cords or strings, these lumina disappear. The primitive tubules themselves never anastomose but, on being split up into a system of cords, the cords of the various systems unite with each other to the formation of a network.

Concerning the fate of the three primitive diverticulae as has already been said the walls of the first two form the true hepatic tissue while the third forms the gall-bladder and duct.

In an embryo of eight mm. the inferior diverticulum is seen to extend first upward and then downward and forward into the connective tissue lying beneath the liver. This diverticulum becomes dilated at its extremity to the formation of the gall bladder while the undilated portion gives rise to the cystic duct. The cells of the "Pars Cystica" become much modified.

The lumina of the first two diverticulae form the right and left hepatic ducts, while the lumen of the third evagination forms the cystic duct. By an antero-posterior pinching off of the hepatic anlage the common duct is formed into the lumen of which the three evaginations empty.

#### RESUME.

1. The liver originates as a single cranially directed diverticulum of the ventral gut wall.
2. In this diverticulum two parts are early distinguished an upper larger, thicker portion and a smaller inferior thin portion. These parts correspond respectively to the "Pars Hepatica" and "Pars Cystica" of Brachet.
3. Two secondary diverticulae of the ventral gut wall are

early formed the one above, the other below the original diverticulum.

4. By re-arrangement of the cells constituting the "Pars Hepaticæ," hepatic cylinders are formed. These are first solid but subsequently tubular.

5. Through the entrance of the intra-trabecular network each cylinder is converted into a system of cell cords. The cords of the various systems inosculate with each other to the formation of a trabecular network in the meshes of which a vascular network is contained.

6. The liver of pig is a compound tubular gland. These tubules are first solid, then contain a lumen, and subsequently are split up into cell cords.

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## Clinical Department.

HOMER DAVIS, '00, Editor.

In the absence of Dr. Gifford, Wednesday, February 28, Dr. Bicknell took charge of the eye clinic at the M. E. hospital.

Saturday, March 10, Dr. Davis operated for indirect inguinal hernia, using the Harris method of suturing with silver wire. A good recovery was made with no temperature reaction whatever.

Thursday, March 15, Dr. Owen gave a special clinic at his office for the Seniors. An operation for deflected nasal septum was performed.

The Senior class witnessed a very interesting operation for intestinal obstruction at the M. E. hospital at Dr. Jonas' regular clinic. The obstruction was found in the transverse colon and proved to be caused by the formation of cicatricial tissue. A section of the gut containing the obstruction was removed and end to end enteroplasty performed with a Murphy button.

The case of syphilitic rupia referred to in the February issue



of the PULSE was brought before the classes at the college, March 19, with no manifestations of the disease remaining except the scars. The results of the five weeks' treatment at the hospital were flattering to Dr. Hoffman, the physician in charge. As was noted before, the case came to the city in bad condition. The nose, face, scalp, arms, legs and trunk being involved extensively with the characteristic, though rare, large deep flat pustular syphiloderm ulcer. The case had been treated before coming to the city for pustular eczema, but needless to say without response. The patient gained twelve pounds in weight while at the hospital.

Dr. Summers has given several very interesting and instructive clinics since our last report.

Among the interesting cases shown to the classes this month was one of pityriasis. This case was shown along with a case just recovering from macular syphilide. The differential diagnosis of these two conditions made an impression on the class not soon to be forgotten.

The Junior class are to be congratulated by the Senior class on the probable many good clinics for next year on genito-urinary and rectal diseases, made possible by the placing of Dr. Anderson on the surgical staff of the Douglas County hospital by the county commissioners.

The sodium salicylate treatment of pneumonia received a trial recently at the Inman hospital. The patient was a thirteen year old boy of full habit. The lesion was located in the lower lobe of the right lung, all symptoms being well pronounced. The disease terminated by crisis on the seventeenth day and the patient made usual recovery. Medical authorities are not agreed upon the efficacy of this new method of treating pneumonia.

It has been announced that Dr. Bridges will hold a medical clinic at the Douglas County hospital on Saturdays during the rest of the college term.

The patient seen in Dr. Milroy's clinic during January last and reported in this department of THE PULSE as suffering of

multiple heart lesions is dead. The immediate cause of death in this case was the effect of over exertion caused by walking a few blocks from the hospital to a barber shop.

A patient at the county hospital known to the students as "English," who has had atropic cirrhosis of the liver for several years past, recently had the operation, paracentesis abdominalis, performed on him before the class. This was the seventy-first time this operation had been performed on him. Many of the students present had witnessed it last year when it numbered in the fifties. The effect of the progress of the atrophy and cirrhotic condition are plainly to be seen in progressive emaciation and the gradual shortening of the time it takes to fill the peritoneal cavity with the serous effusion.

This department is pleased to announce that up to the close of this report, April 7, the number of cases brought before the students and used as clinic material has reached the five hundred mark. This number does not include those treated at the college dispensary and who were not brought before the student body, nor does it include any special clinics.

At the Clarkson hospital for cleaning their hands for a surgical operation the surgeons and their assistants use a preparation composed of equal parts of alcohol, ether, water and green soap.

With the return, April 4, of a patient who had an attack of purulent ophthalmia last January, the results of this disease were illustrated plainly to the Senior class at Dr. Gifford's clinic at the M. E. hospital. We take the following in regard to the case from our clinic notes:

January 31, 1900.—Mr. ———, age 25. Gave a history of having a sudden attack of "sore eyes" Jan. 24. The trouble grew worse fast until Jan. 27, when he went to Dr. Gifford's office at noon. He gave all the symptoms of purulent ophthalmia in a severe form. The right cornea was nearly all ulcerated and the left cornea not quite so bad. There was a constant discharge of

pus, with intense inflammation. An application of an 8 per cent solution of silver nitrate was immediately made and the patient sent to the M. E. hospital, where the ice bag was applied and the eyes washed with a solution of boracic acid every half hour. A one per cent solution of atropine was also used and the epidermis around the eye protected by applying white vaseline. The lower tear points were slit open and the tear sac washed out daily with a 2 per cent solution of silver. The same night of the patient's entrance to the hospital at 11 p. m. another application of the 8 per cent silver solution was made. The next day the discharge still continuing, the patient was anaesthetized and a 12 per cent silver solution was thoroughly applied. This had the desired effect of checking the profuse purulent discharge. After this a 4 per cent silver solution was applied twice daily, also hot applications three or four times daily, as the patient seemed to get more relief from heat than cold.

Feb. 7.—The corneal ulcers look somewhat clearer and the part of the cornea not ulcerated appears somewhat opaque. The corneal ulcers extend over nearly the whole cornea of each eye. The right eye is slightly worse than the left. The aqueous humor was bulging the thinned corneal structure forward, so Dr. Gifford made a horizontal incision clear across and through each cornea to relieve the tension. Some purulent discharge yet.

Feb. 14.—Discharge all gone now. Used a 4 per cent silver solution today for the first time in four days, merely to be on the safe side. The zinc solution and boracic acid solution are used. He gets atropine and hot applications twice daily now. The corneas have been punctured on the line of the primary incision as they bulged forward from pressure of the aqueous humor. Corneal ulcers healing and all inflammation subsiding. All the conjunctiva still very red. The tarsal folds of the upper lids appear to an amateur eye exactly like trachomatous lids. The patient says he can see the shadow of a hand moving before him.

He says he has always been able to distinguish a bright light during the course of the disease and that he can keep his eyes open better in the dark.

April 4.—The inflammatory process has entirely subsided. The corneas white and opaque except at margins, which are wide enough for him to be benefitted by an iridectomy. Vision sufficient for him to find his way about the city. Can see to count fingers at a distance of two feet. An iridectomy of both eyes was done today.

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#### ALUMNI DEPARTMENT.

C. H. BICKNELL, M. D., Editor.

Dr. Stevenson, class of '95, passed through Omaha last week on a hunting trip.

Dr. Dean, class of '95, now located at Sioux City, Ia., was in Omaha recently. His appearance indicates prosperity.

Dr. Burdick, class of '99, late of the Wyoming General Hospital, has formed a partnership with Dr. Beede of David City, Neb.

Dr. A. P. Fitzsimmons, class of '95, who is in the army service in the Philippines, reports two cases of successful laparotomy for gunshot wound of the stomach.

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#### A CASE OF LAMINECTOMY.

G. N. BUTCHART, M. D., Hibbing, Minn.

At the head of the great inland sea, Lake Superior, on Minnesota's great divide, which sheds its rain-fall north to Hudson's Bay, east to the Great Lakes, to the Atlantic, and south to the Gulf through the Mississippi, Nature has hidden during long centuries the largest iron ore body in the world.

Less than a decade has elapsed since it was discovered adding its millions to the wealth of the state and furnishing employment to thousands of men.

Shortly after graduating in '95 I first saw Hibbing, then a



hamlet in tents, became connected with the mining hospital with Dr. D. C. Rood and myself on the staff. We have offices in the building which is large and well equipped with modern sanitary and surgical appliances.

Mining being a hazardous occupation we have a great amount of emergency work as well as general operation surgery.

About twelve hundred men and also families of those who are married are under our care, besides the emergency work for our one thousand woodsmen in this locality and we are local surgeons for the two lines of railway. Severe injuries, pneumonia, and bad cases of typhoid only are allowed admission to the hospital.

I could write you harrowing tales of miners falling from great heights down perpendicular or incline shafts, down shutes and raises and will give brief history of one: G. G., miner, 27 years old, fell headlong down a shaft a distance of over sixty feet. The shaft was 5 by 7 feet, with cross beams every eight feet. In addition to severe contusion there was partial dislocation between the first and second lumbar vertebrae with fracture of the spine of the first; complete loss of sensation and motion, with paralysis of rectum and bladder.

Thinking the paralysis was due to blood clot we waited five weeks in hopes it would be absorbed, in which conclusion we were disappointed. The patient remained fairly comfortable while on a water bed, but developed chronic nephritis.

After careful preparation for some days chloroform was administered by Dr. Ground of West Superior, Dr. Rood and myself operated to relieve the pressure, Dr. Sherwin of Duluth witnessing the operation.

Laminectomy was performed on first lumbar vertebrae, patient suffered profound shock from which he slowly rallied.

Six hours after operation was performed sensation was established and recovered in a few days to almost normal, as did motion only to a lessened degree as there was marked atrophy of all the muscles of the lower half of the body.

In three weeks he was out of doors in wheel chair; appetite improved when defecation became normal. General improvement in the patient's condition was retarded by his kidney complication and by periodical exacerbation of chill followed by tempera-

ture often reaching 104 F. and remaining quite high for several days.

On June 11th, almost four months after injury, the patient passed away after being three hours comatose due to uraemic poisoning.

While the patient's life was not saved, it serves to encourage us to operate early should a similar case come under our care.

## Class Notes.

### SENIOR NOTES.

A. JEFFERSON, Editor.

Nielsen took a flying trip to Wyoming.

Betz is doing most of the practice at Bellevue.

Drs. Douglas and Gritzka have started a dancing school.

Thulin has been appointed interne at the Immanuel hospital.

We are proud of the college library. The librarian has made it possible for us to have a large number of the best books of the public library on our shelves.

The Senior Medical Society recently held its last meeting. Papers were read by Messrs. Overgaard, Shockey, Thulin and Witter. Our society meetings have been highly profitable and we suggest that succeeding classes organize for the same purpose.

The examination in genito-urinary and rectal diseases was held April 10, as Dr. Anderson expects to be in New York the latter part of April. The class congratulates Dr. Anderson upon his appointment to the staff of the Douglas County hospital.

Judge and Mrs. Keyser entertained the Senior class at their home Saturday evening, March 31. The occasion will long be remembered as one of the most enjoyable we have spent together as a class at the O. M. C. During the evening Mr. Lindquest, with a few well chosen remarks, presented the Judge with an inkstand as a token of the esteem in which Judge Keyser is held by the class.

Friday, March 30, a part of the class spent the day visiting the Institute for Feeble Minded Children at Glenwood, Iowa. Through the courtesy of Drs. Mogridge and Wilhite a very enjoyable and instructive day was spent. Preston had some misgiving as to whether or not he would get back safely. His mind was pacified when the Omaha ticket agent answered his question

as to when he could return by assuring him that it depended altogether on when he started. Preston's embarrassment was relieved by Shockey. Shockey didn't have time to buy a ticket and the conductor would have had double fare from him had not Thulin come to the rescue with the acknowledgement that he had a similar experience the first time he took a train from Ashland. Shockey got his rebate. Witter also came in for a share. We didn't know that Witter was a ladies' man, but he has been found out. "Met an old friend," he says. We doubt that he ever ran so fast in the Philippines as he did to catch the train. Each one of the party of six distinguished himself some way. Rolhf smoked his first cigar in three years and Lindquest smoked three to Rolhfe's one.

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### JUNIOR NOTES.

L. M. LEISENRING, Editor

How about that bet, boys?

Towar is nurse at the County hospital.

Prof. Muirhead of Keokuk favored the school with several interesting and instructive lectures on experimental therapeutics last week. We appreciate his kindness and hope to meet him again.

Allen has discovered some diagnostic points about anaemia.

Gilmore and Nilson are learning the fine points about politics while at the O. M. C. They are pretty good electioneers, without question.

When the class '01 meets for a battle of ballots there is generally a warm time and the meeting to elect a speaker to make the address of welcome at the banquet was no exception. After considerable parliamentary fencing the contest finally narrowed down to Arthur Emerson and L. M. Leisenring, the latter being elected. Mr. Emerson then very courteously moved that the election be declared unanimous.

The Junior class called a meeting of the three lower classes about the fifteenth of March to discuss the question of giving the usual undergraduate banquet to Seniors and Faculty. There was a fair attendance of the students, but neither at that meeting nor at any subsequent one was the attendance as large as should

be present for such matters. This yearly banquet is not given simply to "supply a square meal," as one was heard to remark, but to promote college spirit, to show the Faculty that we have the interests of the O. M. C. at heart, to give to the graduating class our best wishes and "God speed!" and incidentally to let the people know that the O. M. C. is alive and kicking. The sooner we get together and "boost" the O. M. C. in every possible way by something done here, by something done there; by pulling together as students and by conscientious work when we have become alumni—by just that much sooner will the high standing of our Alma Mater be a "boost" and credit to us. R. A. Hawthorne was chosen chairman of these meetings and appointed committees on arrangements, finance and program. At the last meeting it was decided to give the banquet at the Y. M. C. A. on the night of May 2.

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#### SOPHOMORE NOTES.

A. H. COOPER, Editor.

"The lost is found."

D. A. Rundstrom is suffering from an attack of tonsilitis.

F. R. Windle of Salem was the guest of D. G. Griffith last week.

Lucky is he who is provided for in the way of habitation and employment during the vacation months which are coming fast.

A few days ago in making microscopical examination of a pathological specimen of lung Fleetwood found a beautiful mucous rale.

Hooper has gone home, being called there on business. Some are hinting that it is matrimonial business, and more surprising things have happened.

Obituary—Minnie Mouse, born in the southeast corner of the lower drawer of a clothes press in the northwest corner of a back room on the third floor at No. — — — street. Minnie was one of a spontaneous family of seven twins and spent the most of her life at home and though her literary education was limited she was quite accomplished in wood carving and music. At the age of sixteen weeks she fell into a trap set for her purposely



by D. G. Griffith and after fourteen hours of confinement she was sold to Frank Morsman at whose hands she became inoculated with anthrax and died upon the altar of science—of starvation.

“Charles Yoder returned yesterday from Lincoln, where he completed his course as a medical student. Mr. Yoder will visit at home for a week or more and then he expects to go to Callo-way, where he will enter the active practice of his profession under a doctor at that place. His many friends in this city are proud of his success thus far and prophecy a continuance of his progress as he is a worthy and determined young man,” says the Lexington Clipper Citizen. Mr. Yoder’s quick wit, handsome face and winning ways are still fresh in the memory of those who know him here and they will probably contemplate with sorrow the wide gulf which now lies between them and their classmate of last year for we must admit that it is a long way from Sophomore to practitioner. Now if Dr. Yoder can maintain in his future practice the speed acquired in his college course (while at Lincoln) he will surely be successful.

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### FRESHMAN NOTES.

E. W. JACKSON, Editor.

Dr. Bicknell recently delivered a lecture to the two classes on the structure of the eye.

Preparations are being made for the banquet to be given the Seniors on May 2. Freshmen will be represented by J. C. Agee.

One of the boys is quite a regular visitor to Council Bluffs of late—wonder why? Any one finding out will please report at next class meeting.

Flipping nickels has proved quite a success to some of the boys as one took a trip home for a day or so. That’s alright, O. D. P., we won’t tell what for.

At last the mustache fiends got in their work and after a hard struggle succeeded in cutting off the few straggling mustaches in the class. It was all jealousy on the part of the cutters as they had grown tired of trying to raise one but could not as

they did not have the required sprouts and thought their only resort would be to try grafting, but so far it has not proved a success.

At any time the librarian can't be found Mr. Martin, the assistant, will be glad to wait on you as he has accepted that position a short time ago and is quite attentive.

The end of the Freshman year is near at hand and the class has begun to diminish. Two of the boys have taken their finals and gone home. Mr. Lemar goes to teach school and Ed. Jungbluth to take a position in a drug store.

From the looks of the small lecture room sometime ago you might have thought the whole class had been plucked, as feathers were plentiful about the room, but such was not the case as we had been having a little pillow case party and the case got torn.

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### LIBRARY NOTES.

By MISS NIELSON, Librarian.

The library now contains several hundred volumes, a large number of which are modern text books of latest issue. The library now contains a sufficient number of the latest text books to afford all needed reference for college work. Additional books and journals are constantly being added.

THE PULSE is much pleased to make mention of the improvements in the library and reading room. All the windows have new shades, the book cases have been brightened up with stain and varnish; a new twelve foot table has been placed in the room, also a Globe card index of latest design has been added to the equipment. Further improvements in furniture and equipment are promised.

New books in the library since our last issue are:

From Dr. H. Gifford—Physiology, Foster, 1880; Physiology, Kirk, 1896; Practical Hygiene, Parks, 1880; Zeitschrift für Hygiene, Vols. 1-10, 1880; On the Eye, Rossa, 1894; Pathological Histology, Cornil & Ranviers, 1880; Ear Diseases, Buck, 1880; Diseases of Pharynx, Larynx and Trachea, Macckenzie, 1880; Atlas of Head Sections, Macewen, 1893; a dictionary of Medical Science; Diseases of Ear, Nose and Throat, Bishop, 1897.

From Dr. A. F. Jonas—A Manual of Surgery, Rose & Corliss, 1898.

New Books Purchased—Anatomy, Gray, 1899; Materia Medica, White & Wilcox, 1899; Physiological Chemistry, Novy, 1898.

Librarian in charge, Miss Nielson.

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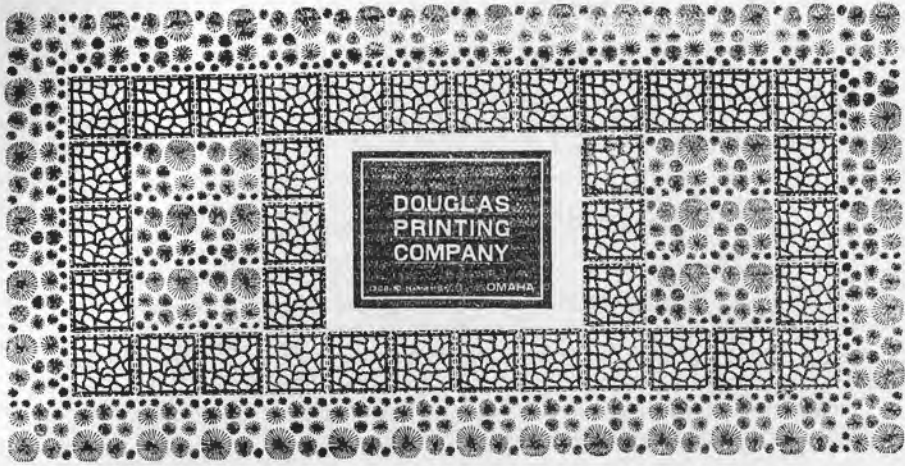
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## Elixir Chloroform Comp.

(LEE)

This elegant and palatable elixir is prepared after the formula of Dr. E. W. Lee, of Omaha, and contains **Chloroform, Chloral Hydrate, Morphine Muriate, Tincture Cannabis Indica, Tincture Capsicum, dilute Hydrocyanic Acid**.

It will be found a valuable **hypnotic** and an **anodyne** of unusual merit. It is **sedative, astringent and anti-spasmodic**.

It has been used with great success in **whooping cough, asthma, emphysema**, and gives much relief to patients suffering with **phthisical cough**.

As a remedy in **hysteria** it has also proven an eminent success, and has a marked effect in cases of **dysmenorrhœa and diarrhœa**, especially when accompanied with **tormina**. Some practitioners have found it to be valuable in **neuralgia**.

**DOSE**.—One half to one fluid dram (teaspoonful) as indicated.

In 1-pint bottles.....each \$0.75 Net.  
" 5 " " " " 3.15 "

# The Mercer Chemical Co.,

STANDARD PHARMACEUTICAL PREPARATIONS,

OMAHA, NEB.

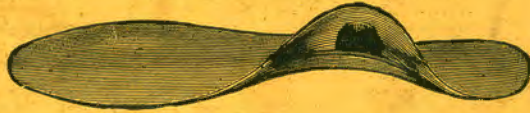


The Aloe & Penfold Company's

...IMPROVED...

# Instep Arch Supporter

No Plaster Cast Needed.



**A Positive Relief and Cure For Flat Foot.**



**CAREFULLY NOTICE THE DIRECTIONS.**

Pains of a Rheumatic nature about the ankles, the heel, the arch of the foot, and occasionally the calf, disappear within a short time after wearing the Supporter. The elasticity of the foot will be regained, and the whole contour of the instep and the foot in general improved.

The Supporter is invaluable for children, their bones being so supple that the slightest malformation of the foot can be quickly corrected by its use.

These Supporters are extremely light in weight, can be easily worn in any shoe, and, owing to the flexibility of the whole Supporter, are far superior and vastly more comfortable than the old-fashioned, rigid devices of steel and bronze employed to correct the above condition.

These Supporters are made in both Full Lengths and Half Lengths; the latter give all the support of the former, but do not take up space in the front of the shoe.

**In ordering send size of shoe; or tracing of foot is the best guide. Also state whether Full Length or Half Length is desired.**



**THE ALOE & PENFOLD CO.,**

IMPORTERS AND JOBBERS OF

SURGICAL INSTRUMENTS, PHYSICIANS' SUPPLIES,

DRUGS, CHEMICALS, MEDICAL BOOKS, OPTICAL

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