

AMERICAN SCHOOL OF HOME ECONOMICS

CHICAGO, ILL.

# Examination Certificate

This is to certify that Mrs E. E. Hellogg  
has this 15 day of June 1900 satisfactorily passed  
the examination in Textiles + Clothing, Part II  
her standing on this subject being Excellent

**American School of Home Economics**

Perfect ... 100 %  
Excellent 90 to 100 %  
Good ... 80 to 90 %  
Fair ... 75 to 80 %

Charlotte M. Gibbs — Instructor



# American School of Household Economics

3325 Armour Avenue

CHICAGO, ILLINOIS

MAR 9 1910

## Test Paper

MAR 17 1910

Subject Textiles and Clothing II Grade Excellent

Course Complete Certificate No. 653

Name Mrs E. E. Kellogg Town Battle Creek

Street 202 Manchester State Mich.

NOTE.—Use this sheet for the first page only of your Test Paper.

### TEXTILES AND CLOTHING.

#### II.

1. It was part of my home training when a child.

b. Yes. It cultivates dexterity of hand, trains in exactness, patience, perseverance, neatness and method; it promotes economy and is in many other ways a most useful handicraft.

2. Even, uneven, short and long, tacking, single over-casting, double overcasting. Even basting is used for holding seams of garments needing to be fitted. Uneven basting serves to keep edges in place for machine work. When the goods is wiry, basting with short and long stitches serves a better purpose than more even stitches. To hold linings in place while in process of making, a cross basting or tacking is used. Over casting is a slanting stitch used over the edge of fabrics to prevent their ravelling. It may be taken from right to left and also from left

and one and one-fourth the diameter of round ones. The distance between should also be carefully measured with a cardboard marker, as also that form the edge of the goods (1 1/4 in.). Buttonholes must be cut with the thread of the goods. If the goods ravel the hole must be overcast before working.

Hooks and Eyes. The position for these should be marked before beginning to sew them on. They are fastened on with over and over stitches. The best way is to baste a bias strip of clinoline along the edge to which they are to be sewed. Enough material should be allowed to fold over the shanks after they are sewed on. Sometimes in place of eyes, loops are made in which to fasten the hook by buttonholing over several threads, making the purl on the outer edge.

9. Wheeler and Wilson.

10. Most of the ornamental stitches.

*Mrs E. E. Kellogg*

wise. Each half should be gathered separately. The band also should be divided in halves, its center being pinned to the center of the garment edge as marked, its right side being on the wrong side of the garment. If the seam be a long one, a division of fourths may serve better than halves. Adjust the gathers; pin the band securely at each end and in the middle and baste between the gathering threads. Stitch, then fold the band over, turn the edge under and baste on the line of stitching. Press if needed, turn the ends in and over sew them, stitch the band. A fold may then be made at the top of the band turned on the right side of  $1/8$  or  $1/4$  inch which stitched down serves to strengthen and finish.

8. Buttons. In sewing on ordinary buttons, do not sew tightly down. Place a pin across top of button and sew over that, remove the pin and wind the thread around the holding threads several times before fastening. Wire shank buttons need to be sewed down tightly. The shank should be parallel with the button hole. An extra strip of canvas over the interlining is desirable on which to sew coat buttons. A good way to sew buttons through a lining is to have a small button on the wrong side.

Button holes. To be serviceable for strain they should be cut in the direction of the pull, or finished with a bar tack on each end. It is best to cut with button hole scissors carefully adjusted so as to be a little longer than the diameter of a flat button

course, that the stitching is far enough from the center to hold the three thicknesses of the cloth. The end of the seams are often finished with some ornament like an arrow head.

A lapped seam has both edges of the goods to be joined so folded within each other that both sides when stitched are alike. For some heavy materials like tenting the edges are not turned in but for fine materials the edge is turned in like that of a hem. ✓

6. A simple placket is made by hemming both sides of the slit, the side to be folded over having a hem double the width of the other side. When the wide hem is folded over the narrow one both must be securely stitched across the bottom.

Another and stronger method is to stitch a tape folded back as far a loop along both edges of the slit. A doubled piece of the goods stitched on as a binding over both edges of the slit makes a substantial placket for underwear, especially children's drawers and pajamas. ✓

7. Gathering is done with the plain running stitch, the needle being kept in the goods and the stitches pushed back over the eye as the needle becomes full. It is better to use two gathering threads. The second one an eighth of an inch below the first. If the gathers are to be sewed into a band the garment should be divided into halves before gathering, these being marked by a pin or other-

under and afterward through the fold of the hem, makes what is termed invisible hemming.

A seam is the line of stitches joining two portions of material. The most common are the plain, over hand, French, felled, flannel beaded, slot and lapped. The plain seam is made with the running stitch. The over handed seam with the over hand stitch; the French seam is twice sewed first on the right side as near the edge as possible. The goods is then folded on the seam and a second seam sewed on the wrong side to include the raw edges. This is a good seam for skirts but not for underwear to be worn next the body. A felled seam is one hemmed down to the goods after being first stitched. This is for the purpose of protecting an edge likely to ravel. For flannels the seam after being stitched should be laid open, pressed flat and the edges cat stitched to the goods on the wrong side. The seam may be made to open on the right side and after pressing the edge finished with finishing ribbon cat stitched on.

For very fine white work a line of beading is used, overhanded between gores and hems. This is termed a beaded seam. The hem is folded on the right side.

The slot seam requires very careful basting, after which it must be pressed open and the strap to be used for facing basted over the wrong side, the center of the strap being on the center of the seam. It may then be stitched as desired, making sure of

to right making a double over casting. ✓

3. I think so. The stitches need to be of equal length on both sides of the cloth. The goods being held with thumb and first finger of each hand, the needle placed in the goods is pushed along in and out with the thimble finger by a motion of the hand starting from the elbow joint. ✓

4. To finish opened seams, to fasten down linings and facings.

It is the one stitch most used in millinery and the best for flannel hems and seams. ✓

5. A hem should have the first turn exactly even, folded by the thread of the goods. Flannels should have but the one turn, cotton and linen have a second turn, both toward the worker. A slanting stitch is used for hemming and the needle should take the stitch through both the edge of the turned hem and the goods. In good hemming the stitches are of even length, even distance apart, and as small as practicable. Hems on flannel should be cat-stitched on the wrong side, then finished on the right side with some ornamental stitch. For table linen a French hem folded as for ordinary, then again folded back on the right side and the edges overhanded, is used. For silk, wool, and other thick materials, a hem pressed with an iron, a fine stitch is taken on the surface, the needle slipped

to right making a double over casting.

My dear Mrs Kellogg - I think so. The stitches need to be of equal length

on both sides. The stitches should be of equal length and the

finger of each hand. The needle should be pushed along

in and out with the thumb finger by a motion of the hand starting

from the elbow joint. Come to me that they hardly

need an apology - I don't quite understand

your process and I don't know but that

is probably due to my own stupidity -

Very truly -

Charlotte M. Gibbs

University of Iowa

March 1890 -

attaching it to the edge of the turned hem and the goods. In

good hemming the stitches are of even length, even distance apart,

and as small as practicable. Hemmed edges should be cut-stitched

on the wrong side, then finished on the right side with some ornamental

stitch. For table linen a French hem folded as for ordinary

then again folded back on the right side and the edges overhanded, is used. For silk, wool, and other thick materials, a hem pressed with an iron, a fine stitch is taken on the surface, the needle slipped



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Perfect ..... 100 %  
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American School of Home Economics

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APR 20 1910

Test Paper

Subject Textiles & Clothing III Grade Excellent  
Course Complete Certificate No. 653  
Name Mrs E. E. Kellogg Town Battle Creek  
Street 202 Manchester State Mich.

NOTE.—Use this sheet for the first page only of your Test Paper.

1. (a) Good tools to work with, an orderly and suitable place to work in, and skill and adaptability on the part of the worker.

(b) Dressmaking is much more complex than ordinary white sewing, and requires more skill of the worker. White goods which demand frequent laundryings require flat seams, close, fine stitches with every raw edge turned in and securely fastened down; while for dresses of silks and woelens the care must be to so make the garment that the stitches will not show on the outside. The seams must be opened and pressed and finished so carefully that they will appear almost invisible on the outside. The ornamentation of white work is often hand work upon the material itself or lace and embroidery sewed on hems and edges of the garment. In dressmaking of wash materials the ornamentation is likely to follow a similar plan. With other fabrics the ornamentation may best emanate from the neck, shoulder and waist, the natural places of support, or used as a border.

2. One which is so carefully cut as to preserve the lines of the figure, harmonious in proportion, simple in design, so well made as to attract no attention to its making, and with or without appropriate but simple ornamentation.

3. To lengthen a skirt, pin the parts of the pattern on the cloth, cut around their top and two thirds of the distance down, then unpin and pin again at the proper length to the bottom and cut the remainder. Some persons cut the gores in two two-thirds of its length from the top. Of course the exact length of the person's figure must be decided by measurement first.

When necessary to lengthen a sleeve, the pattern may be cut at right angles to the line usually indicated by round holes just above and below the elbow. This must be done alike for both the upper and under pieces. When using, allow exactly the same distance both above and below the elbow.

To shorten a skirt pattern, make a fold in each piece as deep as needed two-thirds of the distance from the top. With some patterns a second fold may be needed near the bottom to keep the proper contour. It must also be remembered to make the skirt proportionately narrower. A waist pattern is shortened by folds laid across the front two inches below the arm hole and for the back two inches above the waist line. The sleeves may be shortened by folds in the pattern both above and below the elbow.

4. (a) In cutting the waist aim to have the woof threads of the cloth go as straight around the entire waist as practicable.

Pin the pattern, trace or mark the seams and when cut baste on the tracings.

Baste and fit the lining first. Take the lining apart after making any necessary changes in it. ~~Cut the goods,~~ Pin and baste <sup>to the goods then cut it</sup> the lining. The threads of both should correspond and when basted on the goods should be slightly tighter than lining. The bodice seams should be basted above and below from the waist line. Baste the waist using short even stitches and try, wrongside out. Make changes in straight seams. Turn the front hems, face and mark them for the fastenings. Sew the seams, shoulders last, and press and finish, add the featherbone if any is to be used. Sew on the collar. Sew in the sleeves. Put on the finishing touches. If the waist is to be worn under the skirt, trim the lower edge evenly, stitch and overcast the edge, or a binding may be used. If worn over skirt finish with a bias strip of canvas basted to the wrong side, the waist turned up over this and hemmed down.

(b) In general, in placing the sleeve pattern the top and lower part of the outside seam should be even with the fold or edge of material.

Always cut and fit the linings first, and cut the outsides from them. Both sleeves should be cut and fitted alike. Make

both sleeves first. If cuffs are to be added, ~~add to both sleeves,~~ add to both sleeves at same time. In putting the sleeve together baste the outside seam first, pinning the upper and under part together first in the middle and basting from the middle toward both ends. If there are gathers, the fulness should be distributed between the notches of the pattern. Stitch just outside the bastings, remove the bastings, press the seams, trim and bind each edge or overcast evenly. At the bend of the elbow and an inch or two above and below it, the seams must needs be slashed because of the curve. If one hasn't a sleeve board use a padded chair rocker.

When cuff or trimming is to be added make it complete and blind stitch to the sleeve. If the sleeve is a full one, it can be first put into a narrow band the size of the cuff and the cuff sewed to it. If the sleeve is to be finished without cuff, fit a piece of bias crinoline at the wrist, turn the sleeve edge over this, press and cat stitch down, also cat stitch the crinoline to the sleeve lining then face with a bias strip of silk.

(c) In placing a pattern for skirt on the goods put the half pattern of the front gore, straight edge on a lengthwise fold of the material, the other gores may be cut double with the cloth folded lengthwise if it is wide enough. If the cloth has neither nap nor figure and no difference in sides, the gores can be

alternated. One must always make sure the line of holes in the center of the pattern runs even with the warp of the material. If there be a nap the lengths must all run the same way. The nap should run downwards with the exception of velvets and velveteen.

When the goods is figured the design should run upward. Gores may be cut double if the right sides are placed together, but of course two lengths will be needed. If piecing is needed the figures must match and the warp threads even.

Always pin the pattern on first in the middle, smooth it both ways and pin at top and bottom. It is desirable to do all placing, pinning and cutting on a long table rather on the bed or floor. Cut with long sharp shears that will give a long sweep and an even edge. Mark all notches in some way, with chalk is a good way. After the pieces are all cut, remove the pattern and pin all together joining the side gores first to the front. Begin at the top to baste as all unevenness, if any, should be at the bottom. Carefulness in basting should be the rule. If a lining is used, cut, baste and fit this first. Then take apart, baste the outside on each piece, taking care that the warp in both runs the same way in each piece, then join.

Fit the skirt when basted, change if needed. Finish the placket. Stitch exactly parallel with the basting and close to it, using medium length stitch. Cut the bastings and remove. Open

all seams and press, finish with binding or overcasting or stitching. Next fit the band. Use a narrow band cut with the warp and allow for turning in at the ends. Fit the band to the skirt when trying it on, marking where the seam should run. The skirt must not be stitched to the band.

When the band is placed, finish the bottom of the skirt-- turn it under and pin all around the proper length. Then baste and try on to see if even length. The best finish for a gored skirt is a perfect bias facing of some sort, carefully fitted around and stitched on.

(d) If there be an interlining it should be cut bias and  $1/4$  inch smaller all around than the collar when it is to be blind stitched to the waist. If the collar is to be sewed on with a seam, this is not required. Place the right sides of both the collar and lining and goods together and the interlining next the lining. Stitch around the top and both ends, turn and press. The corners must be turned with exactness and the ends carefully finished or the collar will appear bungling.

5. By using only the point or side of the iron and allowing it to touch only the center. The iron should not be pushed as in ironing but lifted along. Care must be taken that the iron is not too hot by testing it first on a piece of the goods. The board on which the pressing is done should be covered smoothly

with a dark color for dark garments and white for light garments. For curved seams a rounded board of some sort is needed. As far as I know all garments made with seams are better if pressed. Of course light weight materials require less pressure, silks must be pressed very carefully and with only a warm iron because they scorch easily and some colors fade under a hot iron.

6. (a) Ornament should be fitting in character; showing a purpose; in harmony with the style and textile of the garment and should add to its beauty but should not be conspicuous. The ornament should not stand forth as the chief thing but only as a harmonious part of the whole garment.

(b) Beauty of dress lies in simplicity hence over ornamentation should be avoided. On the edge and hems when ornament would strengthen the garment, folds and embroidery and ruffles may be used. Buckles and bows unless serving a real purpose are out of place. Order, proportion and harmony the three rules of beauty need to be regarded as closely in the ornamentation of a dress as in other things. Lace is a very desirable ornament for many dresses but heavy lace is not appropriate for a thin goods or fine lace on heavy material. Appropriate embroidery makes one of the most successful ornamentations. The trimming at all times should be such as will preserve the unity of the dress.



(d) The ornamentation should be suited to one's figure. It is an error if one is tall to ornament the dress with length-wise panels and bands that will accentuate the persons height or if the wearer is dumpy to put tucks crosswise of waist and skirt of such size and number as to make the person appear more stout.

(Picture No 1)

7. The waist is ornamented with three different kinds, and differing patterns of lace beside medallions and tucks. The material is a thin lawn. I think the ornamentation too heavy, and too profuse altho the lines are in very good taste. There is more ornament than plain space. <sup>(No 2)</sup> The dress is simple in style but the buttons along the side serve no use and the embroidery design on the waist is too large for a single flower spray. It covers enough space to be a tree. To my mind embroidery is only appropriate on plain goods, this is apparently embroidered on fancy textile.

(No 3)

The skirt with tunic and flounce seems to me suitably ornamented with a band that confines the fullness of the tunic and tassels that edge its border.



Do you think a tunic skirt is usually good?

This design seems a little <sup>9.</sup>  
confusing to me -

9. Where it will serve a purpose, the natural centers and places of support for garments are in general suitable. The eye naturally seeks the central line of the figure and hence the most proper place for fastenings and buckles or other ornaments for fastening would be there.

10. (a) A small pattern for closely woven material, a thin goods may have a larger design. If flowers are used it is better that the design be a conventionalized one. The ornamentation should be flat and without relief. If stripes are employed they should run lengthwise with the warp. In general small and invisible checks are preferable to large patterns for most uses.

(b) Plain material is by far the most economical, as it can be made over. It is always in good taste, if well made, and when much worn does not show wear like figured textile. It can be redyed and is always restful to the eye. It lends itself far better to any ornamentation desired, just as a plain wall-paper makes the best background for pictures. I really can think of no disadvantages unless it might be considered such, that it is not always the newest fad.

Shows spots & dust  
more quickly perceived.

11.

I feel that some of your harmonies have also considerable contrast, that is of course allowable, but 1, 2 + 3 seem a little strong.

12. Navy, Grey, White.

I prefer navy to black for a dark garment, for it is not so somber, harmonizes as well with other colors and is as easily cleaned.

Grey shows soil very little and I like it especially for that reason. It fades but little and is a coal color.

White is my favorite color and one I would always wear, but for the expense of laundering. It is cooler in warm weather than any other color, and I always did like the idea of knowing by sight when my garments are clean.

13. Such as are of soft texture. French flannels, nainsook, china silk, fine soft linens.

(b) That it should be simply made, dainty, never so elaborate as to be conspicuous. The child should be the central and chief thing and the clothing should be like the frame ~~in~~ a beautiful picture, merely the setting for the more lovely thing.

Children's clothing too, should not be of a character to hamper them in any way, either their freedom of movement or by being too good to play in. Neither should their garments be ugly or so different in material or style <sup>from</sup> ~~for~~ other children's as to prove a source of unhappiness. L

14. That proper care of clothing makes it far more durable and far more presentable at all times, and gives the wearer an appearance of being so much better gowned that it is well worth the little time required.

(b) I have cleaned cotton of fruit stains, ink, blood, grease, iron rust using the methods mentioned and with good success. Have never cleaned wool with anything ~~but~~ gasoline or soap suds. Linen I have often had occasion to cleanse from fruit stains by pouring boiling water over the spots. I have had no opportunity to clean either silk or velvet.

15. I think it depends upon circumstances. If one is a business woman having but little time it would be better economy for her to buy new hose than to spend her time darning worn ones. If however, time is the most available asset, it is I think, economical to mend when the article is of good value. I can offer no better methods than those given.

16. It has not been practicable for me to make any garments while I have been studying this division, altho I have often made waists and dresses for my self.

17. Not very. As a general rule I think an inferior grade of material is very apt to be used and the selling value increased by ornamentation which while adding beauty to the garment does not increase its durability. ✓

18. Ever since my marriage I have been so occupied in assisting my husband in his literary work I have had no time to do dressmaking. I used to make my own garments, and am sure my failures were from lack of knowledge and that had it been then my privilege to have had this very complete course in textiles and clothing I should have had no failures to report. ✓

19. I have as yet had no occasion for trial, and have no questions to ask.

20. I fear not.

21. They have added much to my understanding of the subject and afforded me knowledge which I am sure will avail me much if I shall have opportunity to sew for myself at any time.

*Mrs. E. E. Kello 79*

My dear Mrs Kellogg-

As a general rule I think an inferior grade

is very patient to work out these two papers on sewing when you do not sew

and I have been so occupied in assisting

my husband in his literary work I have had no time to do

out of patience with models and dressmaking. I used to make my own garments, and am sure my

directions for sewing, although

my private course in tailoring

and clothing I should have had no occasion to report. I am very glad if you have

gained something from them

Very truly

SI They have added much to my understanding of the subject

and afforded me knowledge which I am sure will benefit me in my

I shall have opportunity to see for myself at any time

Yours truly

Charlotte M Fells

The old Spartans knew that to have strong men they must have strong mothers, and the mothers were required to take the very same exercises the men took. It was required of them. It was not an optional thing at all. There are a lot of splendid things to be learned from Sparta during the time of Lycurgus.

Question Box Lecture Jan. 17, 1910

32-33

After all

There are only three things

That are really worth while,

To be good, to do good,

And always to smile.

Mrs. E. E. K., 1911.



Translation of  
Letter from Dr. Tissier.

June - 1912

The observations indicated by Dr. Metchnikoff to the Academy of Science have great interest. Their general significance is as follows:

You know that all our efforts have been in the direction of preventing intestinal putrefaction, the predisposing cause of intestinal infection, and sometimes the determining cause of digestive and nervous disorders. To prevent intestinal putrefaction, we introduce as much sugar as possible into the intestine, and certain microbes ferment these sugars and thus produce acids (the bacillus Bifidus, which is the natural ferment, or different forms of lactic bacilli which have the disadvantage that they do not acclimatize themselves definitely in the intestine of man). The acid produces arrest of the bacteria of putrefaction. But sugar is rapidly absorbed by the mucous membrane of the stomach and intestines. It does not reach the large intestine. The sugar that goes the farthest is that of the date, which can be recovered in the caecum. Of all the hydro-carbons, starch alone arrives in the large intestine, where it is decomposed and absorbed by the mucous membrane. We may increase the quantity of the sugar produced, and thanks to the ferments which produce acids from sugar, for instance the Bifidus and lactic acid forming bacilli, putrefaction may be arrested more quickly. It is thus that Wollman, student of Dr. Metchnikoff, has succeeded in finding the amylo-lactic bacillus, which is not proteolytic, which he has called glucobacter. In fact, we see in animals which absorb these microbes, less indican in the urine, a proof of the diminution of the production of indol in the intestine. Dr. Metchnikoff believes that indol is one of the causes of arterio-sclerosis and of premature old age.

All this will contribute to diminish or to retard the appearance of senility. This is the substance of this communication.

My opinion is that this last deduction may be exaggerated. Indol is a very feeble poison for man. There are poisons which are much more dangerous than we

know not, which are produced by microbes of intestinal putrefaction; nevertheless, I think that the idea of aiding the transformation of starch into sugar in the large intestine by these microbes is ingenious. It may be useful in certain cases.

(Dr. H. Tissier).

July 18th, 1912.

Miss Babcock:-

Please look up for me right away a paper on exercise prescription or something of that kind in which I have tables comparing the strength of men with the strength of women.

J.H.K.

v-s

Dr. Kellogg:

A report of your findings in your dynamometric studies is given on pages 197--213 Art of Massage. The points you especially showed were that the muscles of the chest are notably weak in women, corresponding with the weak inspiratory power of women; the back muscles are also weak in women, and weakest of all are the flexors of the arm and pronators and supinators of the forearm. In the legs and thighs women are relatively strongest. The thigh abductors and adductors are the strongest muscles of the average woman. You also mention that the weakness of the back muscles in women is probably associated with frequent tendency to backaches. Ellis also suggests that it is also associated with lateral curvature of the spine. Ellis believes that the physical development of the woman should not be carried out on the same lines as men. Lagrange, Mosso and others believe that it should not be athletic in its methods.

Modern women are weakest in their respiratory muscles of the chest, the arms, muscles of the back, and the complementary muscles of the abdomen. ~~Mosso~~ suggests swimming as being the most valuable exercise. Mosso calls attention to the fact these abdominal and respiratory defects are of quite modern appearance, and by no means inherent in women.

*Mosso*

### The Muscles:

Dr. Sargent showed that the thigh of the American girl of 15 years is absolutely two inches larger than the American boy's of 15. At the age of 20 Sargent found that the growth of the thigh in the woman exceeds that in the men by 1 1/4 inches. This is the only measurement in which women do absolutely exceed men.

After a study of the field of anthropological investigation, Ellis states that generally in the average "a man is a man even to his thumbs, and a woman is a woman down to her little toes." He draws three general conclusions from his study: (1) Women are more precocious than men; (2) There is an earlier arrest of development in women than in men; (3) Hence the proportions of women tend to approach those of the small man and of children.

According to Ellis, civilized women do not show any greater attraction and aptitude than men for any form of vigorous physical ~~exercise~~ action, with the single exception of dancing.

Measured by the dynamometric scale the power of the female hand is one-third less than that of the male hand. A man can carry double his own weight. A woman can carry only half of hers (Landois and Sterling).

According to Sargent the weakest boy is stronger than the average girl in the strength of the expiratory muscles. Fifty per cent of girls fail to reach a point of strength surpassed by 90 per cent of boys. The average boy can carry one-third more than the average girl. (Landois).

<sup>In</sup> Experiments with the dynamometer in which the hand grip was tested, Ricardi found that women reach their maximum more quickly than men.

In regard to reaction time Lewis, testing various classes of individuals found that American men respond in the shortest time, Indians, negroes, American women coming ~~next~~ afterwards in the order named. He tested the reaction time for light, sound, and electric shock.

Herzen ~~show~~ observed that girls react at first more quickly than boys. In boys the reaction time improves up to puberty; in girls it improves less

rapidly and the maximum is lower than in boys.

Jastrow found that normal voluntary movements where no special direction was given are quicker in women. In the case of the longer movements, however, where the maximum effort was required men were quicker.

Ellis states that "in strength as well as in rapidity and precision of movement women are inferior to men. This is a conclusion that has never been contested. It is perhaps also in harmony with the results of those investigators (Vebera, Pagliani, etc.) who have found that as in the blood of women so also in their muscles there is more water than in those of men. To a very large extent this is certainly a matter of difference in exercise and environment. It is probably also partly a matter of organic constitution."

Dr. Kellogg has shown by precise dynamometric observations that the strength of the average woman falls far below that of the average man.

EFFECT OF DRUGS ON WHITE MICE

L. B. Nice,  
Lab. of Phys., Harvard Med. School  
Journal of Experimental Zoology, Vol. 14, (1913).  
1913.

Object --

To find the effects of alcohol, nicotine, and caffeine on the spontaneous activity of white mice when kept under the influence of these drugs in moderate quantities all the time.

16 male mice - offspring of 1 pair.  
4 sets - controls, alcohol, nicotine, caffeine.  
Time -- 36 weeks.

Results:

Controls - Max. Run .....	119,523	revolutions	in 1 week
Weekly average .....	87,493	"	" 1 "
Alcohol - Max. Run .....	111,833	"	" 1 "
Weekly average .....	63,767	"	" 1 "
Nicotine - Max. Run .....	110,289	"	" 1 "
Weekly average .....	86,321	"	" 1 "
Caffeine - Max. Run .....	93,932	"	" 1 "
Weekly Run .....	59,079	"	" 1 "

"The revolutions of each cage are recorded by means of an alarm clock whose balance wheel had been removed" etc. "As a cage revolves, the end of a wooden lever is raised by each pin in turn, causing the clock to register. Each revolution of a cage corresponds to 1 second on the clock.

Control Line -

The control mice have the highest total activity of all the lines. They also have the highest average maximum. None died.

Alcohol Line -

This line of mice started out well. They reached a high average maximum during the 12th week, then drop abruptly. Their total activity is 73% of that of the controls.

"The activity of all the alcohol mice seems to have been checked and lessened." The viability of all the mice was weakened, for 9 died, one was evidently going to die soon and the 4th lost 20% in weight. This loss in weight occurred during the last month of the exp." "Thus it appears that alcohol had a markedly injurious effect on the viability and activity of these mice and that these effects were cumulative.

Nicotine Line -

The average total activity of these mice is almost equal to that of the controls. None died. Nicotine did not seem to affect the health of these mice but may have slightly checked their growth.

Caffeine Line -

Lowest records of total activity of all the mice used in experiment. Grew normally. One seems to have been injured for it died when 32 weeks old. Caf. appears to have decidedly lessened the activity of the mice. Total activity, 68% of controls.

THE BATTLE CREEK SANITARIUM . History, Organization  
Methods. By J. H. Kellogg, M. D., Superintendent, Battle  
Creek, Mich., 1913.

Whether one is a subscriber or not to the extreme views regarding diet, which are held and strictly practised at Battle Creek, it is interesting to learn at first hand just what the system is that is carried out in that institution, and the reasons therefor. This profusely illustrated book of 224 pages recites at length what is done there and explains why it is done. It is interesting to read and satisfies one's curiosity regarding a much talked of therapeutic method.

--The Medical Record, Sept. 27, 1913.



Brieger, L. -- The treatment of sciatica by exercise baths -- Berl, Klin, Woch.  
Jan. 26, 1914.

The exercise baths which I recommended 12 years ago for sciatica are still considered of therapeutic value. Fürstenberg, Goldscheider, W. Alexander, Stoffel, Muskat, Platte and others agree to this.

It occurred to me to explain the method to you to-day, by means of a series of pictures. At the beginning the bath is about 37° C. and cools to about 30°.

In general, the procedure consists in extensions of the diseased leg, combined with rotation and vibration from the foot up, so that the whole leg is shaken. After each treatment the patient must rest a little so as to relieve the new pain caused by the exercise. For this it is useful to give the leg light strokes under water, which is frequently especially valuable in meralgia. The bathing process may take half an hour. At first, when the pain is greatest, they may be given every day, later, after the first week, 3 or 4 times a week. Complete cure takes, according to the severity of the case, 4-6 weeks. It is remarkable that moderately severe cases often withstand treatment more than those accompanied by very great pain. In the latter form, I like to cause vibration by means of the vertically extended middle finger, a procedure which, properly carried out, makes (narcortica) more bearable. If high-pressure steam is available, it is advisable to direct it against the sensitive spot for 5-10 minutes before the bath, or boiling hot applications may be used. The bath must follow immediately.

-----  
Then follow six pictures showing the exercises and briefly explained.

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-----

Then follow six pictures showing the exercises and briefly explained.

Sit with chest held well to fore,  
Feet placed square upon the floor,  
Do not let your body slump,  
'Twill give your spine an ugly hump.

Stand head erect and lowered chin,  
Hips held back and stomach in,  
Walk with firm, elastic gait,  
And at an even measured gate. /2

Do not limp nor sway nor wriggle,  
Totter, clatter heels, nor wiggle.  
Look the world straight in the face,  
And march upright with manly grace.

October 2-16

**Would you live well and long,**

**Then listen to the song**

**Of every bee, and bird, and flower, and tree,**

**Live in the open air,**

**Eat biologic fare,**

**And from every sort of sickness you'll be free.**

Oct. 31-16

Air and light and exercise  
Make rosy cheeks and brighter eyes,  
Breath and temper both make sweet,  
With nimble wits and nimble feet.

Out of doors there's life and joy  
Which shade and indoor life destroy.  
Fresh air revives the vital spark  
Which soon expires in the dark.

Oct.31-16

Drugs.

Tainted fuel-alcohol, tobacco, drugs, toxins-will ruin a heart just as impure gasoline will spoil a good engine.

Dr. Wm. Brady in "Personal Health", 1916.

//

Dec. 14, 1917

Memo. for J.H.K.

You wish to write a paper on this.

*706615*



11/28/17  
November 28, 1917.

Memoranda for paper on practical suggestions for the hospital care of abdominal cases.

Old methods were most trouble.

Original method gave opiates to lock the bowel up for a week or two.

Very large doses were often given.

Lawson Tait showed a better way. I never saw him use opiates a single time during the several months I was with him. He assured me he never gave opiates except when he was sure the patient was going to die. He refused to operate on a patient when the patient was in the habit of taking opiates, a method introduced by him and with modifications still in vogue but not in vogue among all prominent physicians. Not free from faults -- promotes trouble.

First, the use of cathartics before operation keeps the bowel in a spastic state, induces reverse peristalsis and creates gas in the small intestine which is forced back by retro-peristaltic action of the colon. Opiates given before the operation still further discourage bowel action. Operation itself paralyzes the bowel temporarily. The opiates following the operation, the rest in bed, the starvation and the use of saline laxative usually given the third day after operation all tend to produce obstinate intestinal stasis. Starvation produces acidosis which is prolonged by the constipation and the use of opiates and the upset caused by the laxative; and the laxative itself drains the body of fluid and promotes renal inefficiency.

Intestinal stasis causes a toxemia as shown by coated tongue, lack of appetite, nausea and vomiting, restlessness

renal congestion, albumin and casts.

The rational method.

1. Regulation of the bowels by natural methods--  
agar-agar, bran, paraffin and the use of an enema. At the end of  
eight or nine hours the residue of food taken at each meal is all  
in the colon. This may be washed out by a thorough enema leaving  
nothing to make trouble by backing up. When the ileocecal valve is  
incompetent. When a spastic condition of the colon exists, residues  
left to ferment and putrify in the colon if not removed will back  
up into the small intestine and produce gas and other inconveniences.  
The administration of an enema

February 28, 1918.

MEMO FOR J. H. K.

I want all of my papers put together including the last one on incompetency of the ileocecal valve, published in the "Annals of Surgery" (all of my ileocecal valve papers)

Memo for Dr. Kellogg

May 4, 1918.

Major Wood suggests that I should prepare a mechanical reconstruction unit consisting of the various appliances which we have found useful in the treatment of chronic invalids. I suggest the following list:-

- The electric light bath
- The electric photophore, hospital form
- The fomentation heater (?)
- Vibrating chair
- Pulley Weight with work adder (See Lombard letter)
- Dynamometer
- Riding horse
- Bicycle (?)
- Trunk shaker
- Percussion apparatus
- Bowel kneader (?)
- Automatic exercise apparatus
- Estimate work done by weight of sandbags
- Determine work value of each point of weight by increased metabolism
- Have experiments made with no weights, with moderate weights and heavy weights
- Compare results
- Wolfram light
- Light vacuum apparatus (improved Beer's)

Put ball

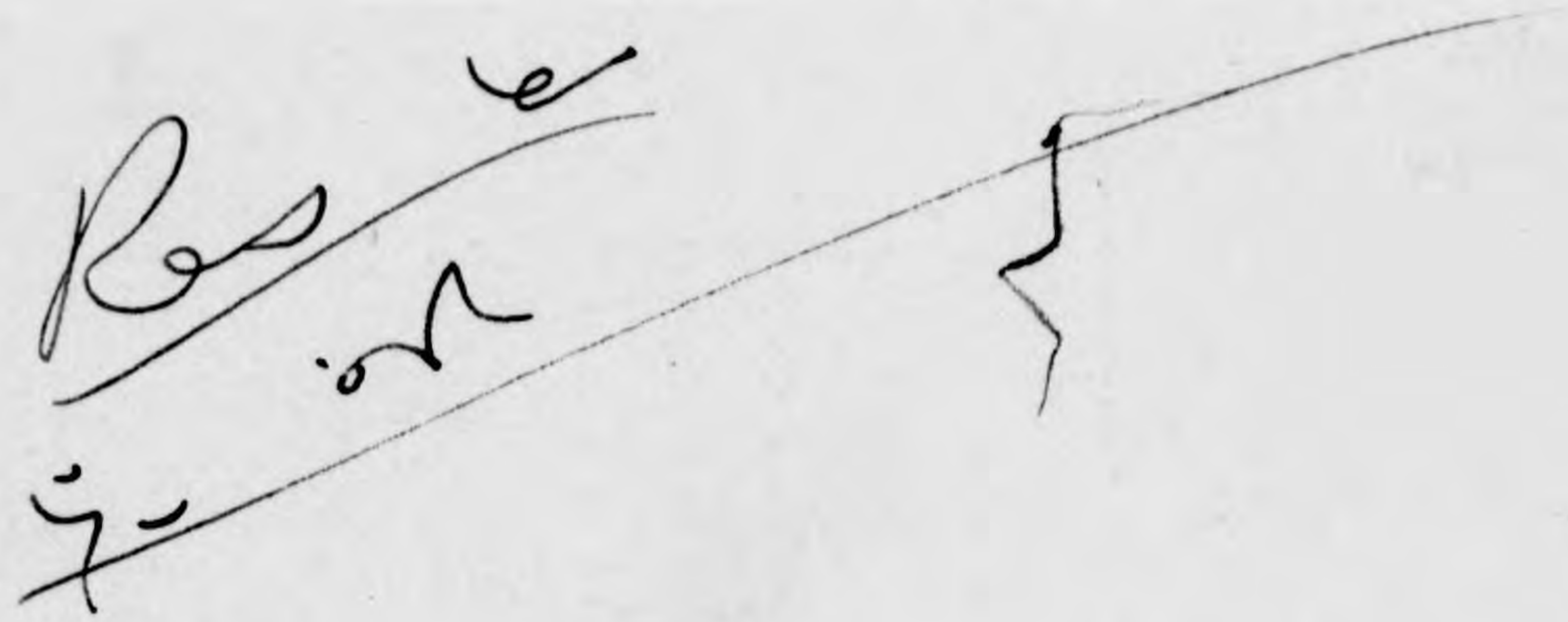
Setting Up Drill, U. S. Army.

1. Arms over head.
2. Forward bend, touch the floor.
3. Legs swinging keeping the feet parallel.
4. Heels raising, arms sidewise swinging.
5. Walking and running in place.
6. Breathing, arms backward fling, heels raising.

MADEWELL BOND

v-m 5/19/18

*Res*  
*in*



Aug 7/18

Analysis of Case  
of Habits - with relation  
to diseases

Smoking  
Sedentary life

Aug 7/16

Le for - Patrick Westman

Habits & alcohol

21) 3.00  
    .14

Tobacco

Tea & coffee

Meat eating

249.5) 35,000  
    3465

Spices

4355) 1415 (41  
    140  
    50

Serif

Ornith

- Ironies ?
- Hypnotics ?
- Arseuical
- Mercury
- Cathartics ?

Pat. Westman

Aug 7/18

Diabetes

H3) 1195 + 11  
 463  
 ---  
 63

5) 895  
 179  
 ---  
 895

895

179

495

1569

250 - 17

246 - 16

174 - 15

114 - 14

101 - 13

69 - 12

52 - 11

58 - 10

H95 - 1866 - 1909  
 (average 11)

945

43

more than 1000 cases by  
 new method



Aug 7/18.

Cardiovascular at Rest

134 - 15

159 - 14

153 - 13

83 - 1.2

Aug 21/18

# Blood Pressure

Made up chiefly two things  
~~elements~~

- 1. Hydrostatic } pressure gravity
- 2. Hydraulic } Pressure outside vessels
- } Force of heart beat

## Two Elements

(a) The pressure of vessel walls.

(b) Force of blood movement

## Vessel Tension

- (1) Elastic fibres.
- (2) Muscle fibres.
- (3) Nerve impulses.
- (4) Adrenalin.

Aug. 2/18

# Force of blood movement

depends on <sup>supply</sup>

(1) (5) amt of blood ~~circulation~~

(2) (6) Pulse ~~velocity~~

(3) (7) Pulse rate

(4) (8) <sup>Constriction</sup> ~~Contraction~~ of arteries

(5) (9) Viscosity of blood

(6) (10) Hydrostatic pressure

~~(7) (11) Vasoconstrictor centers~~

(Coe H1005)  
H20

Coe H1200

C112

Coe H1005<sup>3</sup>

C012 H22 O11-

H20

C015 H24 O12

C021 H44 O22

Coe H1200

Coe H1204

Coe H603

H402

Coe H1005

\* A reader of Good Health  
who has recently become  
~~permitted to the experience~~  
discovered the advantages of systematic  
~~the benefits of daily~~ systematic  
exercise as a means of pro-  
moting health and efficiency,  
~~just~~ and has become  
an enthusiastic advocate  
of "setting up drills," writes as  
follows of his experi-  
ence:-

.07000  
2  

---

140

8-16 milligrams daily  
6-16 " "  
10-12 milligrams  
= 1/6 grain

0.1371

Massage  
1000?  
Colour  
Neuras  
Inf. Hyg  
New Book  
P. 4,  
H. H. B. Book  
Vibratherapy  
Light  
Sim.  
Leife  
Character  
Causes  
Outlines  
Phys Ch  
Diabetes  
FC K 18  
Le. G.  
Man. 20

stenographer for Dr. H. L. F. ...

UNIVERSITY OF MICHIGAN

FRED NEWTON SCOTT

Rhetoric

ANN ARBOR September 20, 1918.

Dear Doctor:

I have just read, with much interest and gain, both of the books which you were kind enough to send to me. They ought to be of great service to autointoxicated humanity. The description of the milk regimen was especially fascinating. If I had read it at the beginning of vacation, I should certainly have tried it on, either at home or at the Sanitarium. It is too late now, however, for the University opens in a few days, and then I shall have to go over the top with the rest of the faculty.

I will try to get a notice of both books into the Alumnus, the organ of the Alumni Association.

Mrs. Scott and I have just returned from a peculiarly delightful auto trip to Quebec. One small puncture was our only casualty. I find that driving agrees with me. At any rate my health is pretty stable.

You may be interested to know that my younger son, Richard, who was in the



Book on Feeds dup Sept. 30, 18  
copied

Abstracts of Clutterbuden

Hindhead

Meedel & Osborne

McCullum

Fisher

Fletcher

Glavin-Ker

Posner

Zung

Metchnikoff

JFK's Observations  
Results of Animal feeding  
on Gain

Discussion of Ration

See Diet Best & add thereto

show how to estimate ration

from work done.

Get summaries of my experiences

499  
5519  
5616

stenographer for Dr. M.

UNIVERSITY OF MICHIGAN

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ANN ARBOR September 20, 1918.

Dear Doctor:

I have just read, with much interest and gain, both of the books which you were kind enough to send to me. They ought to be of great service to autointoxicated humanity. The description of the milk regimen was especially fascinating. If I had read it at the beginning of vacation, I should certainly have tried it on, either at home or at the Sanitarium. It is too late now, however, for the University opens in a few days, and then I shall have to go over the top with the rest of the Faculty.

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You may be interested to know that my younger son, Richard, who was in the

Engineering College, is now in the Navy as a wireless operator. His boat -- a submarine-chaser -- is operating somewhere in the Mediterranean.

Yours sincerely,

F. M. Scott

Dr. J. H. Kellogg.

Book on Birds

dup Sept. 30, 18  
copied

Abstracts of Chatterden

Hindhead

Mendel & Osborne

McCollum

Fisher

Huletcher

Glenn

Posner

Zung

Metchnikoff

J.H.K.'s Observations  
Results of Animal feeding  
at Bain

Discussion of Ration

See Diet Best & add thereto

Give how to estimate ration

from work done.

Get summaries of my papers.

49.9  
55.1  
56.16

2

# Individual Foodstuffs

Foods in general  
Food Principles  
(see itinerary)  
Amino acids  
building stones

Characteristics  
Origins  
Special uses

Consider in groups

Cereals

Fruits & vegetables

Vegetables { carbohydrates  
non-carbohydrate

Nuts

Legumes

Discuss "Complete Proteins"

Foods which contain

Complete proteins

Animal & Vegetable

Proteins

How  
Food Principles  
refer to  
different foods

Proteins { complete  
incomplete  
building stones  
Cereals  
Vegetables  
Fruits  
Nuts  
Meats  
Composites  
Vegetables  
Assimilation  
(H. Stat. Rec'd)

# Tables

## Chemical Composition

(Rule for converting % to calories per oz.  $(\% \times 4 \times 25.4) \div 100 = \% \times 1.14$  for P+CH)  
 $(\% \times 9 \times 25.4) \div 100 = \% \times 2.56$  for H<sub>2</sub>O)

## Calories per ounce + serving

Cellulose

Vitamins

Base + acid properties

Zinc Content

Iron Content

# Requirements

Fruit

Milk

Full milk  
Skimmed  
Protein milk  
Whey

Milk & Cereal

(Lacto-carbohydrate)

Uncooked

fasting

Water drinking

Supplementary Feeding

Fruit <sup>juices</sup>  
Malt sugar  
Milk sugar  
Malt-lactose

2 feedings between  
10 + 5 and  
0 + 5  
and 1 at bedtime  
100 cal of CH each feeding  
equal to 1 g of malt or  
lactose sugar or 11-80 g  
of fruit juice

Special Features in Individual Cases.

Diabetes  
Obesity  
Emaciation  
Fever

Tuberculosis

Constipation

Auto-intoxication

Hyperhydrochloria

Hypso

Achylia

Dyspepsia

Leucorrhoea

Spine

Scuroy

Pallagra

Beri-Beri

Ch. appendicitis

Crippled Colon

Infants

Children 2 yrs up

Gastric ulcer  
duodenal ulcer

Eczema

Skin diseases

Proriasis

Acromoles (boils)

Priglets disease

acidosis

Surgical cases

before op.  
after op.

Gastric op. cases

Intestinal "

Ordinary abdominal cases



nov-21-18

Matters to be attended  
to

Saw

~~Handwritten scribbles and notes in the left margin, including the word 'Saw' and various illegible markings.~~

Health  
Recon-  
struction  
League

~~by not to go~~  
Call at Hosp.  
note receipt heads  
note to Board  
letter to nurses  
note to Receipt measure  
letters  
Electrics  
Stewart take My office  
on all doctors work for  
dictation  
Normal School Students  
Jack to Horn  
Faculty meeting  
Lectures Thursday  
Com. of Chairmen  
Grand Health  
Electric receipt

Good Co.

Dividends - Notes - Smith  
Reporting                      Carton  
Soy Eff.                              Interview  
Rudrick - Nelson

Equipment Co.

Electric - arc light  
~~Leaky light~~  
Place in ~~Automatic~~  
+ other machines  
- chain esp. on tris  
Went + ~~Smith~~

Prinball.

Recut of House

Prinball documents, review  
see book about.

Watson - Printer acct.

Chauffeur

Auto mobile

Helena

Emma - Claude

Good Health

copy

~~see Dr. Kent about envelopes~~

↓ Simple Life

Abstracts

↓ Physiotherapy

↓ Hydrotherapy. Mrs.

Other old ones.

Parcel post Envelopes

~~Journal M. G.~~

~~Good Journal~~

~~Myologic Chemistry. Bala.~~

~~Mrs. Francis~~

Adv. in

~~Dr. Martin~~

Phys. Cult.

~~Crude material~~

~~art. in Good & Haldwin~~

old use

~~at Bay~~

for 1919

adv. in Phys.

Books

J. A. Davis's  
book on old age  
Old Age Scrap  
book

~~Medical~~

Health Courses

~~Literary~~

Look over Index Remin.

~~Whittenden~~

~~Kindred~~

~~Manual of Food Book~~

Prepare Series of  
art for G. S.

Also Baldwin Old Age

at Peary Cedar. These  
for next year. etc

Arrange for Reports  
weekly from

Hood Co.

Kirkland

Goff,

Mod Med  
Daily

Hedigh

Ward

Henderson

~~Truttles~~  
~~Stewart~~ ~~Oliver~~

~~Asibley~~ Miss Brown  
Judd copy of  
ceedings of 1872  
~~Extension Dept~~

~~Miss Merriam~~

Wood. Meds.

Get girl to head  
1/2 time with Merriam  
rest in Wood Meds.

2 pp. in G. H.

Haldru Old Age  
at Mack



32

50

6.00:

2.50

2.50

2.150

3.00

10.00

2.350

2.000

3.000

4.000

2.25

1.000

40.25

40

5.00

1.70

75

3.55 | 10.00 | 11.00

3.55

---

2.50

3.55

---

9.50

Economize fuel  
Modify a generator

2400  
1800 calories heat

7200 - B.t.u.  
900 - gallons raised 10°F

Raise 30 bbls of water 10°F

24) 17200  
60) 3000

15<sup>12</sup>  
140  
12  
1680

5 B.t.u. cost per unit  
or 150 lbs, 20 every hour

air  
in temp of 186°F just balanced  
in water at 92°-95° balanced

Save coal by wearing more  
clothes

Sent at 11 P. M. Oct 28 /18

Dr. Keranpton,

Supit Physical  
Education Public Schools  
New York City

Conditions now favorable  
for carrying out plans  
we discussed when you  
were <sup>here</sup> much interested  
in proposed researches.  
~~on that~~ Am leaving  
Friday for long vacation.

Blood Pressure

What is Blood Pressure

What is High Pressure

What Causes High B.P.

What are the Dangers of H.B.P.

~~What is~~ High B.P. Curable  
and How

What is the most relief for  
a person with H.B.P.

Memo made in Florida  
1918-1919?

Caloris alvatehus

Take Dick Finches

No 40 boat Brindis

Alexandria

Alex & Constantinople

Athena, Mytilene

Truyma porters

Italian women

Greek sailors, figs, olives

sea liner, seeing back head  
Aeward,

July 7, 1919

Angie, -

This is the list of furnishings  
I wish to loan. The boys Robert & George



- 2 Brass Beds with Mattresses
- 1 Dresser (In Sitting Room)
- 1 Chiffonier (In Babe's Room)
- 2 Library Tables - (Light wood)
- 2 Square Tables -
- Kitchen chairs
- Washing machine -
- Wicker chair

MESSAGE

Neck... ( Pulling and twisting  
 ( Opposition kneading ( Out  
 ( Stretching..... ( Post  
 ( Lateral ( R  
 ( L

Shoulders.. ( Opposition-Kneading ( Out  
 ( Inside  
 ( Post  
 ( Posterior-both

( Ankle. ( Opp ( O  
 ( ( I  
 ( Rotation

Legs

( Knee- Thumb and side of hand  
 ( Lower leg.. ( Inside with one hand on foot rotating  
 ( Outside " " " " " "  
 ( Upper leg -using knee to rotate reaching nerves

Back




August 18-1919.

Mrs. Butler:-

Enclosed find a sheet of memo. on the thigh.

Please put with my exercise memoranda.

J.H.K.

A large, stylized handwritten signature in dark ink, appearing to be 'J.H.K.', is written over a diagonal line that extends from the bottom left towards the top right of the page.

v-k

MASSAGE

Blood heals

Relaxation ( Sand bags  
( Support of feet-head

Efficient manipulation

Relation of bloodvessels to bones

Deep kneading ( Wringing  
( Pulling  
( Elbow and forearm  
( Back  
( Buttocks  
( Chest  
( Abdomen

Resistive kneading

Forearm	Feet
Arm	Leg
Shoulder	Thigh
Trunk	Stretching
Chest	
Back	
Shoulder-hips	

Neck ( front  
( back  
( twisting  
( stretching

Aug. 1919

Memo for Lecture for Nurses, Nov. 19, 1919.

The Technic of Surgical Nursing

1. Before operation
2. During operation
3. After operation

The key-note is prevention.

To be fore-armed is to be fore-warned.

Must know the principal causes of death and of serious complications in connection with surgical operations.

In surgery there are several factors to be considered:

1. The patient
2. The operator
3. The anesthetist
4. The operation and the operative technic
5. The assistants

Complications of Surgical Operations: How to Meet Them.

1. Shock
2. Collapse
3. Pain
4. Acidosis
5. Nausea and Vomiting
6. Pneumonia
7. Adhesions
8. Constipation
9. Wound Infection
10. Slow Convalescence

HOWARD A. KELLY, M. D.  
CURTIS F. BURNAM, M. D.

ROBERT M. LEWIS, M. D.  
WILLIAM NEILL, JR., M. D.

THE HOWARD A. KELLY HOSPITAL, INC.  
1418 EUTAW PLACE  
BALTIMORE, MD.

Dec. 27th, 1919.

Dear Dr. Kellogg:-

Affectionate regards and best wishes to  
you and yours.

Very faithfully yours,

HAK/HG

*Howard A. Kelly*

The best remedy for "effort syndrome" is not rest but graduated exercise.

The principal cause is infection.

In many cases, the cause is "occult tuberculosis."

Cases of deficiency in vital energy are often due to hidden infection--in most cases, occult or latent tuberculosis.

Many of these cases are classed as "neurasthenia."

(Probably in most of these cases the fundamental cause is intestinal toxemia, which saps the vital energies of the patient and lowers resistance, and so opens the way to tuberculous and other infections.)

Leonard Hill shows that a rabbit dies when vertical, with its head up, because of the draining of the blood into the venous reservoirs of the abdominal cavity.

The work of the heart in the circulation of the blood is due to two things:

(1) Internal friction of the blood due to the viscosity of the blood and its contact with the walls of the blood-vessels.

(2) Gravity. The second cause is only active when the body is in a vertical position.

When the body is raised to the upright position, accumulation of the blood in the abdominal vessels is prevented by an increase of vascular tone in the vessels and an increase of tension in the abdominal muscles.

The extent of this compensating action may be determined by the comparison of the blood-pressure, systolic and diastolic, taken when/first in the recumbent, then in the standing position.

Says Sewall, "It would be difficult to exaggerate the practical importance of this simple test of the efficiency of one of the most sensitive, most widespread and most vital of the mechanisms of the circulation."

Sewall first called attention to this test in 1916.

Referring to this previous paper, he says, "The fundamental work of Crampton in the same field was not then known to me."

In cases of extreme fall of blood-pressure in the erect position, the pulse and heart beat usually become very slow instead of quicker, as might be expected.

"Observations on several hundreds of subjects lead me to the conclusion that in changing from the recumbent to the standing posture there is always a rise in diastolic pressure and a fall in pulse-pressure.

"In the normal (and some pathological) cases the systolic pressure does not change materially or show a rise.

"In a great proportion of subjects coming under the physician's eye, however, there is a systolic fall of blood-pressure in the standing posture.

"Barach and Marks tested the gravitational effect of postural change in normal subjects supported upon a ~~in~~ rotatable board, by means of which the body could be supported erect

with the least possible output of muscular exertion. They found in the majority of cases a considerable rise in systolic pressure in the recumbent and a fall in the erect posture, the pulse-pressure usually varying in the same direction as the maximal pressure.

"It should be stated that, however interesting such experiments may be, they do not represent the normal conditions in the erect posture, which is maintained by the outflow of motor energy.

"Systolic blood-pressure is the measure of ~~the~~ vascular strain.

"The rupture of a weakened arterial wall is probably determined immediately not by a continuous but by a mounting high pressure, such as an elevation of 20 to 30 mm. Hg., which experience shows is prone to accompany even slight muscular exertion or psychic disturbance.

"The systolic pressure measures the maximal head of power available for driving the blood; when it is greatly in excess of normal, danger of rupture threatens the arteries; when it is greatly below normal no compensating mechanism can supply nutriment to the tissues.

"The diastolic blood-pressure is generally admitted to measure the peripheral resistance to the circulation and to be an index of vasomotor tone.

"If the auricle or ventricle be suddenly enlarged to twice its diameter the muscle fibers must be exerted eight times as much as before to produce the same pressure.

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"The diastolic head of pressure in the aorta, then, is the driving force by which the coronary arteries are filled, and it is a fair presumption that the volume of blood sent into the heart muscle depends primarily on the diastolic arterial pressure, though the completeness of its removal is determined by the vigor of systolic contraction.

"There must be a critical point in the diastolic pressure below which the nutrition of the heart must suffer from lack of adequate supply of nutriment, and it is easy to believe that a diastolic fall of pressure might cause such a loss of driving force as would lead to asystole and which could be fatal with degenerated cardiac tissue.

"These accidents are prone to occur under conditions which favor gravitation of blood into the abdominal vessels, as on assumption of the erect posture after action of the bowels or by prolongation of diastole under digitalis.

"Heart failure is preferably the result of subnormal diastolic rather than of supernormal systolic blood-pressure.

"The paramount immediate cause of heart failure is deficiency in the coronary blood supply and that in the great majority of cases the culpable factor is abnormal depression of the diastolic blood-pressure.

"Diastolic blood-pressure is an index of peripheral resistance to the circulation whose functional regulation is clearly under



control of the vasomotor mechanism, but which, also, has intimate relations to the elasticity of the vascular walls and obscure, though probably most important, dependence upon the viscosity of the blood.

"Systolic hypotension is a sign of weakness which is prone to result in constitutional evidence of subnormal nutrition.

"Diastolic hypertension signifies undue strain upon the vaso-constrictor mechanism. It is the causal antecedent of cardiac dilatation and hypertrophy.

"Diastolic hypotension indicates a low head of pressure in the nutrient stream for the heart; it leads to asystole and its acute onset is probably the cause of fainting and of sudden death.

"In a useful article Warfield\* states that the diastolic pressure registers what one may call the average peripheral resistance, and that a high diastolic pressure invariably means constant increased work on the part of the heart and leads to hypertrophy of the left ventricle; that a gradually rising diastolic pressure is more significant than high systolic pressure; that large pulse pressures are essential for the compensation of hypertension cases, decreasing pulse pressures in such cases is a sign of failing heart; that any pulse pressure below 30 mm. Hg. must be regarded as low, above 50 mm. Hg. as high.

\* New York Med. Jour., 1915, cii, 508.

"The important contributions of Erlanger and Hooker<sup>18</sup> and of Dawson and Gorham<sup>19</sup> and others have shown that, heart-rate remaining the same, the pulse-pressure determines the nutritive supply of the tissues.

"Erlanger states that a fall of PP. to 10 mm. Hg. is indicative of shock.

"It is a matter of general knowledge that the pulse-rate increases on changing from the recumbent to the erect posture. The elevation in heart-rate in the standing as compared with the recumbent posture is subject to wide variations in the normal individual. The average increase of beats may be taken as twelve to fourteen per minute.<sup>22</sup>

"An impressive result of such experiments as will be detailed is that patients suffering from cardiovascular disease may show remarkably slight change of rate with posture.

"There may be mentioned a rhythmic variation in heart-rate which has no essential relation to posture. It is characterized by James Mackenzie<sup>23</sup> as the "youthful form of irregularity." It consists in a rhythmic quickening of the heartbeat during inspiration and a slowing during expiration.

"In those cases of circulatory insufficiency in which actual fainting is threatened through "blood ptosis" in ~~in~~ the standing posture, there is usually not a rise in pulse-rate, as might be expected.

18 Johns Hopkins Hosp. Rep., 1904, xii, 145.

19 Jour. Exper. Med., 1908, x, 484.

22 Vierödt: Daten u. Tabellen f. Mediziner, 1906, p. 235.

23 The Study of the Pulse, 1902.

but a very marked slowing.

"It is worth insisting on the conception that the efficiency of the circulation or the life and welfare of a patient with a cardiovascular disease, no more depends upon heart-power than upon a number of functions associated with it.

"The excessive gravitation of blood into the limbs and belly when a person stands erect does not predicate heart disease, but does prove inefficiency of the circulation, which, for the individual, is the important thing. A certain man, aged sixty years, with dilated and probably degenerated heart muscle, manifested a fall of arterial pressure of 20 to 30 mm. Hg. on rising from the recumbent posture. One morning he sat up on the side of the bed and fell dead. The plain interpretation of the accident attributes it to blood ptosis resulting in such critical lowering of his aortic diastolic pressure that the coronary circulation ceased. Had the heart not been diseased the result would no doubt have been a temporary fainting fit. It is the possibility of such accidents that makes it important to determine the organic integrity of the heart in slight ailments and indicates caution in permitting postural changes, and especially going to stool on the part of certain cardiac patients.

"The pioneer work upon the postural changes in the arterial blood pressures appears to have been presented in the important contribution of Erlanger and Hooker<sup>27</sup> fifteen years ago. They introduced the useful term "pulse-pressure" and first insisted that conclusions of value

27 Loc. cit.

could only be drawn from blood-pressure determinations by taking into account both minimal and maximal pressures. In the careful study of a case of orthostatic albuminuria they showed reason for believing that the renal symptom was dependent on lessened pulse-pressure in the standing posture.

"In a lengthy discussion of the significance of pulse-pressure they concluded that under anything like normal conditions the pulse-pressure was a reliable index of ventricular output and that the product of PP x PR (pulse-pressure into pulse-rate) represents the velocity of the blood current and therefore the nutritive supply to the tissues.

"In the normally functioning subject there is, as has been pointed out, on rising from the recumbent to the erect posture but little change or (usually) an elevation of systolic blood-pressure, a constant rise of diastolic pressure and a slight fall in pulse-pressure.

"Comparison of the blood-pressures in the recumbent and the erect postures gives us an unrivalled opportunity of estimating the efficiency of the vital mechanisms which compensate for the gravitational resistance to the circulation.

"An important addendum to the signs of vascular strain in compensating for the resistance of gravity is to be found in the increase in the heart-rate in the erect posture. Crampton<sup>29</sup> has ingeniously constructed a table representing postural changes in circulation efficiency through the combined vascular and cardiac elements.

"As might have been predicted from the foregoing considerations, the postural observation of the blood-pressures has its main use

in the detection of functional cardiovascular insufficiency. The victims of this condition are miserable by reason of physical weakness and nervous instability. There may be local signs, as headache, dizziness or tinnitus in the erect posture.

"The class comprises a very large proportion of the patients who visit a doctor's office. Such persons habitually manifest low arterial pressures, there often being a marked fall (15 to 20 mm. Hg.) in the systolic pressure in changing from the recumbent to the standing posture.

"Further evidence of the vasotonic weakness is given by the continued subsidence of systolic pressure, as observations are continued in the standing posture, so that after ten to fifteen minutes the patient complains of fatigue or faintness.

"For such victims of blood ptosis no treatment seems so immediately effective as the support of a good abdominal belt.

"It is interesting to note that after such support has been afforded for a few weeks the belt may sometimes be dispensed with with comfort for considerable periods.

"It not infrequently happens that the history of a patient leads to the prediction that evidence of blood ptosis will be found, but on taking the blood-pressure nothing of the sort is shown. Nevertheless, though the systolic blood-pressure may show no fall in assuming the erect posture the diastolic pressure undergoes an inordinate rise, leading to an abnormal drop in the pulse-pressure.

"Indeed, as far as numerical values of the elements of the

blood-pressure serve as an index of the physiological efficiency in the absence of gross organic lesions of the pulse-pressure, in my experience, is the one invariable determining factor.

"When there are symptoms of circulatory insufficiency there will usually be found a subnormal pulse-pressure, and when the erect posture is assumed there will be an inordinate decrease in the value of the pulse-pressure to levels of 25, 20 or even 10 mm. Hg.

"In 100 cases in which the pulse-pressure was low, 30 mm. Hg. or less, in the standing posture, the predominant cause of the fall of pulse-pressure was fall of systolic pressure in 10 cases; rise of diastolic pressure in 69 cases and combined fall of systolic and rise of diastolic pressure in 21 cases.

"Further investigation of such circulatory abnormalities will usually, if not always, establish the existence of some focal infection such as is liable to occur in connection with the teeth or the tonsils and the removal of which I have seen followed by a return of the vascular conditions toward normal.

"In the choice of quickly acting remedial measures for this cardiovascular insufficiency, I have found, contrary to common advice, that the exhibition of 10 to 15 drops of the tincture of digitalis t. i. d. often does good. (Use cold baths and cold over heart instead, with abdominal supporter.) J.H.K.

"Oliver,<sup>30</sup> in his interesting work, properly advocates recumbent rest after meals, with exercises, etc., directed to <sup>the</sup> increase

30 Blood and Blood-pressure, 1901, p. 270.

of muscular tone, especially in the abdominal wall. (Use automatic exercise and inclined table, also weighted compress to abdomen.) J.H.K.

"The vital picture here is that of a heart dilating with undelivered blood and a vasomotor system overstrained by reason of vascular underfilling.

"As has been stated the product obtained by multiplying the pulse-pressure by the pulse-rate is supposed to represent the velocity, that is the irrigating efficiency, of the circulation. If this is true, as experimental evidence indicates, this product would seem to be one of the most important data that could possibly be desired for estimating the effective work accomplished by the engines of the circulation.

"In the few normal persons of those approaching normal, whom I have examined the product  $PP \times PR$  is usually greater in the standing posture.

"In a small series of 8 cases of cardiovascular disease I found that with good compensation, with one apparent exception, the product was greater in the erect than in the recumbent posture; the reverse was true in proportion to the decompensation.

"In the normal subject or in cases of well-compensated organic disease the ratio is near unity or exhibits an excess of work done in the erect posture. In cases of functional circulation-inefficiency or in a decompensated cardiovascular disease, as far as my experience shows, the reverse is true and the relative decrease of velocity in the erect posture is somewhat proportional to the disability.

"This conception throws light from a new direction upon the fundamental clinical experience that in certain active disorders, as tuberculosis, rest in the recumbent posture has a remedial value unparalleled by any other method of treatment.

"Anyone can convince himself that, in the great majority of cases, the maximum of blood-pressure moves up and down with the rhythm of the respiration.

"The range between the highest and lowest systolic pressures in the same subject may reach the extraordinary values of 20 to 40 mm. Hg.

"Foley and his collaborators investigated also the respiratory variations of the diastolic blood-pressure, with the resulting conclusion that with deep breathing the ordinary pulse-pressure increased from 19 to 85 per cent.

"My own findings in this particular agree most positively with those of Erlanger and Festerling,<sup>36</sup> that the maximal blood-pressure coincides with the phase of expiration, most commonly with the beginning of the expiratory pause.

"Every conclusion as to the auscultatory systolic range of arterial pressure should be checked by the tactile evidence of the radial pulse.

"It is worth noting, ~~h~~ that in patients subject to bronchial asthma the respiratory variations in maximal pressure are characteristically great.

#### CONCLUSIONS.

"Excessive fall of systolic blood-pressure in the erect posture



indicates weakness of vasomotor control.

"Excessive rise of diastolic pressure denotes vascular spasm and abnormal effort.

"Each results in abnormal depression of pulse-pressure, the maintenance of which to a certain magnitude is necessary to proper nutrition of the brain and other tissues.

"The blood stasis manifested by fall of systolic pressure may be measurably counteracted by the support of an abdominal belt.

"The diastolic blood-pressure represents the head of power available for the coronary circulation.

"When that pressure is high and the heartbeat vigorous we have the conditions of cardiac hypertrophy.

"When it is high and the heartbeat is feeble the result is probably simple dilatation.

"Fainting and sudden death are probably the results of critical lowering of diastolic blood-pressure.

"Abnormal elevation of the diastolic pressure is the usual cause of depression of pulse-pressure in the erect posture. It probably signifies lack of contractile vigor in the ventricles.

"The manifestation of chronic circulation deficiency is probably usually founded upon toxemia from focal infection or upon a larval form of tuberculosis, here denominated "occult tuberculosis."

"Estimations should be made under different conditions of the velocity of the blood-current, as represented by the product obtained in multiplying the pulse-pressure by the pulse-rate.

"The maximal arterial blood-pressure is more or less markedly affected by respiratory movement. According to these observations it is highest during expiration and lowest during inspiration.

"The difference between the maxima taken in the two phases of respiration may reach, with quiet breathing, anywhere between 0 and 20 mm.

"Perhaps the average difference between the "maximum systolic" and the "minimum systolic" blood-pressure is 5 mm. Hg.

"Besides the influence of respiratory movement the systolic blood-pressure is subject to another secondary cause of fluctuation. This probably consists in more or less slow variations in the intensity of vasomotor tone. The height of maximal pressure may apparently change 30 mm. Hg. within a minute from this cause.

"The occurrence and range of such pressure variations seem to be determined by the vital reaction of the subject to strain."

A great mistake by a great biologist and scientist, a biologist who discovered the great functions of the ameba and the white blood cell, more than 50 years ago, started a very lively discussion about the agelong colon problem which still might perhaps have been finished perhaps long ago if all the <sup>salient</sup> facts had been more fully collated and made known.

One day in his laboratory Quinck, one of Metchnikoff's assistants, said to him in his laboratory, since the colon germ makes so much trouble, why not hunt up some harmless germ that may be made to live in the colon. Metchnikoff was immensely pleased with the idea, and not being himself an expert in bacteriologic technic, he secured the services of Dr. Tissier, one of the ablest experts of the Institute, where he had for many years served as a pupil and assistant of the great Professor Pasteur.

Dr. Tissier soon discovered in Yogourth, the famous fermented milk of the Orient, the bacillus which he thought suitable for the purpose. (Lacto bacillus Bulgaricus) Metchnikoff administered the cultured milk to one of the laboratory young men and found in the stools which bacilli which seemed to be identical with them.

Tissier's Bacillus Bulgaricus seemed

a good fit for the colon, believed by the natives of the Euphrates region to be a gift from Heaven which had been preserved by Noah in the Ark and so a

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Omit above - shorten

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The substitute for the colon germ was made available to the public by Metchnikoff's \_\_\_\_\_ under the name of Lacto-Bacillus which became known in this country in the spring of 1900 and spread rapidly but was disappointing in results.

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Look up Tissier's papers from 1900 to 1912 in Medical Library at Washington.

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Setting-Up Drills

- |       |  |   |
|-------|--|---|
| 1     | Standing posture.....                              | (head<br>(chest<br>(hips<br>(arms<br>(feet  |
| 1 1/2 | Running in place                                   |   |
| 1 3/4 | Turning  | (head<br>(chest   |
| 2     | Walking.....                                       | (arms<br>(hips out  |
| 2 1/4 | Straight stride                                    |   |
| 2 1/2 | Change step  |   |
| 2 3/4 | Tiptoe walking                                     |   |
| 3     | Wing standing; head back; bend body forward; bend. |   |
| 4     | Sitting posture (cushion for back)                 |   |
| 5     | Wing sitting; head back; bend body forward; bend.  |   |
| 5 1/2 | Breathing  |   |
| 6     | Standing, backward bending (forward bend after)    |   |
| 7     | Arms swinging back and forward.                    |   |
| 8     | Swimming (breathing)                               |   |
| 9     | Wing stand. Knees bend.                            | Chopping<br>Balancing. Body horizontal.<br>One leg extended back-<br>ward. Half standing.<br>Diving<br>Jumping Jack<br>Bending<br>Warming up<br>Measuring<br>Engine. Arms alternate-<br>extending, knees raising. |
| 10    | Neck hold " "                                      |   |
| 11    | Trunk twisting                                     |   |
| 12    | Side bend 1/2 wing                                 |   |
| 13    | Wing stand. Knees raising.                         |   |
| 14    | Neck holding. " "                                  |   |
| 15    | Fall out. Wing.                                    |   |
| 16    | " " Neck.  |   |