

DISCUSSION.

DR. ALBERT E. BULSON, JR., Fort Wayne, Ind., said that he had a similar case of tuberculous iritis under tuberculin treatment at the time, and that he had the pleasure of seeing Dr. Brown's case when it was presented before the Chicago Ophthalmological Society for diagnosis, and at the time suggested the use of tuberculin to establish a diagnosis. He believes that ophthalmologists are apt to be led into error as to the value of tuberculin in establishing a diagnosis unless certain well-defined rules are followed in its use. Dr. Bulson said that while Dr. Brown speaks of using small doses for diagnostic purposes and increasing the dose if no reaction is secured, he is inclined to agree with many observers that a large dose, say from 10 to 12 milligrams, is warranted as an initial diagnostic dose, and if no reaction is secured the dose may be repeated in the course of a few days. Even in the presence of a localized tuberculous infection a small dose of tuberculin may produce absolutely no reaction. It is of the most importance that a record of the temperature for three days prior to the injection be carefully kept for comparison with the record following the injection, as some of these patients having only a localized area of tuberculous infection, as in the iris, will show very little reaction, even with a large dose of tuberculin. On the other hand, a decided reaction should not be accepted as a positive indication that the patient has tuberculosis, for the rise in temperature may be only coincident, as Dr. Bulson has known it to be on two occasions in the practice of one of his confrères. The injections should be sufficiently large and continued over a sufficient period of time definitely to establish the fact that a reaction is or is not being produced by the injections. Syphilis should be excluded, as it has been known to influence reaction from tuberculin injections. The case of tuberculous iritis in a 4-year-old child which Dr. Bulson has under tuberculin treatment at the present time, exhibited a marked reaction on several occasions to injections of 10 milligrams, but has failed to show reaction to doses of half that size. With each injection the eye, which has lost light perception, but gives the patient no discomfort, assumes an angry red appearance, and the seven nodules on the iris become infiltrated and swollen. This local reaction in the eye lasts from twelve to thirty-six hours, leaving the eye about as it was before the injection. Treatment has been carried on regularly for about six weeks, and though the general physical appearance of the patient has improved, the condition of the eye seems to be unchanged. As a means of establishing a diagnosis of tuberculous iritis, the injection of tuberculin is certainly warranted, but as nearly as Dr. Bulson can learn by reference to the literature on the subject, the curative value of tuberculin in these cases depends largely on whether the lesion is localized and on its degree of advancement.

DR. E. V. L. BROWN, Chicago, said that the absolute diagnostic value of tuberculin for tuberculosis, and tuberculosis only, is now very generally accepted. The syphilographers are united on this point. The article by Tinker in *Johns Hopkins Hospital Reports* is very conclusive, and Dr. Brown thinks, can be relied on as being absolutely diagnostic. In reply to a question, he said that the use of air in the anterior chamber in these cases was reviewed by Kaiser recently in the *Klin. Monatsbl. f. Augenheilkunde*.

PNEUMONIA IN THE YOUNG.*

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CHICAGO.

Pneumonia is always interesting. In the young, interest is heightened by the statistics and statistical fallacies of its prevalence; by important problems connected with its causation and avenues of bacterial invasion, by modifications in its morbid anatomy and

symptomatology, by the frequency of serious complications, by the apparent difficulties of diagnosis, by the uncertainties of prognosis, and by the chaotic state in which we find the literature of its management.

To estimate fairly the prevalence and fatality of

TABLE SHOWING PREVALENCE OF PNEUMONIA BY AGE PERIODS.

Morbidity.	Age periods.										Total.
	0	10	20	30	40	50	60	70	80	90	
Authority	10	20	30	40	50	60	70	80	90	100	
Aufrecht	103	333	437	259	195	83	62	29	1,501		
Bamberger	2	23	62	38	28	23	5	6	187		
Blach	7	259	489	259	209	128	92	43	1,522		
Chomel			83	63	61	38			245		
Derpmann	306	257	156	161	137	96	43	20	1,176		
Dietl		142	187	127	129	82	61	22	750		
Doubleday	2	21	88	60	41	18	16	2	248		
Dusch	223	28							251		
Elsner	4	33	47	28	23	6	5	3	149		
Feldhausen	8	14	11	12	4	4	2	1	56		
Flint		13	44	37	17	7			118		
Frankue		98	260	182	113	98	121		872		
Fricks	22	47	46	24	14	11	5		169		
Funk	416	65	56	134	136	70	64		941		
Fussell	57	27	18	8	13	11	2		136		
Graf	10	3	3	11	5	5	5	4	46		
Grissolle		118	272	175	152	123	63	21	924		
Gunsburg		1,500	850	800	500	450	350	550	5,000		
Hall	3	16	22	13	5	6	3	2	70		
Holt	448	52							500		
Holwede	15								15		
Huss	9	229	1,041	816	363	125	29	4	2,616		
Juergensen	171	22	21	23	22	29	29	13	330		
Kissel	52	18	15	11	6	3		1	106		
Krause	56	3							59		
Lebert	4	34	72	41	37	23	10	1	222		
Moelmann	51	31	18	33	25	35	23	6	222		
Munich Hosp.	169	187	143	51	68	32		1	651		
Norris	71	71	136	84	67	30	13	7	479		
Fause	34	36	15	29	19	9	14	13	169		
Pye-Smith	95	93	87	62	54	20	18	5	435		
Rall	14	3		2	2	6	5	3	35		
Rietz	158	44	18	32	38	22	34	11	357		
Roth	1	25	79	43	30	34	15	10	237		
Rochester	3	15	43	38	41	18	12	17	167		
Sampter	9	64	116	73	41	22	5	1	331		
Schapiro	2	71	73	27	24	26	27	8	258		
Scheef	25	2	3	3	5	2	4		44		
Schiel	25	4	13	27	22	27	19	22	159		
Schlesinger		20	31	17	10	2	3		83		
Schlesinger, E.	159	18							173		
Schroeder	514	116	80	127	101	71	58	48	1,120		
Sears & Larabee		66	229	241	191	93	48	19	887		
Smith, A. A.		1	18	23	9	5	3	1	60		
Smith, H. H.	31	42	123	99	73	34	24	8	434		
Speck	2	12	12	7	10	5	2		50		
Stecher	13	118	290	90	59	50	24	12	656		
Stortz		83	67	38	31	27	22	8	276		
Tate	2	9	9	10	11	2	2	1	46		
Townsend and Coolidge	10	113	373	217	116	80	32	12	953		
Vienna Hospital	7	395	408	231	134	128	58	20	1,410		
Waller		20	31	9	8	9	4		81		
West	220	246	225	132	96	4	2		925		
Wunderlich	4	10	6	8	13	5	3	1	50		
Ziemssen	163	23							186		
Author	367	86	96	51	65	55	113	53	888		
Totals	4,068	5,411	7,021	5,084	3,597	2,291	1,552	1,001	30,025		
Percentages	11.4	18.0	24.6	17.4	12.0	7.9	5.4	3.5	100		
Mortality.											
California, 84	56	9	12	26	34	17	22	10	166		
Cleveland, 87	184	15	17	16	21	17	21	20	311		
Connecticut, 18861	239	28	59	59	75	199	126	204	889		
Massachusetts, 63-81	15104	449	954	2428	2786	3176	3497	6945	35339		
New York, 76	1308	41	116	161	178	172	153	179	2288		
Ontario, 83-6	1832	308	515	437	453	445	494	570	5054		
Pye-Smith	6	7	19	21	31	14	9	3	110		
Rhode Island, 65-79	1360	115	207	236	296	341	469	595	3619		
Rochester	1	2	5	6	1	5	1	21	21		
Sears & Larabee	7	50	81	82	16	16	5	1	219		
Smith	8	28	37	31	16	16	16	141	141		
St. Louis, 85-6	369	40	92	95	105	113	80	64	958		
Townsend & Co.	1	12	69	55	40	44	15	8	244		
United States, 80-90	6198	18512	151000	15208	14527	15306	16794	19768	166196		
Vermont, 59-81	2214	327	377	323	457	699	1076	2132	7905		
Wich, 48-51	991	27	69	104	169	322	321	279	2482		
Totals	85625	9906	17686	18291	19291	20782	23298	30763	225642		
Percentages	37.9	4.4	7.8	8.1	8.6	9.2	10.3	13.7	100.0		

pneumonia in the young is a statistical and judicial feat of no mean proportions. In tabulating and analyzing 30,025 cases of, and 225,642 deaths from pneumonia, the following conclusions may be drawn: During early childhood pneumonia is encountered oftener than at any other period; from 10 to 30 years, much less

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frequently; from 30 to 50, somewhat oftener; subsequently with diminishing frequency. On the contrary, if its prevalence is estimated by comparing the deaths caused by pneumonia with the number of persons living at various age periods it will be found that in early childhood its mortality prevalence is moderate; from 10 to 20 years, it sinks to its lowest level; from 20 to 50, it gradually but moderately advances; beyond this it rises with great rapidity, and is greatest in old age. These facts are clearly shown in the accompanying table.

The apparent inconsistencies shown by these tables may be explainable by a broad survey of the concomitant facts in the case; as, e. g., patients of different age periods do not seek admission to hospitals in equal proportions; consulting physicians do not see patients of various ages in fair proportion; the death rate varies at various periods, etc.

Children of any age may have pneumonia, but the recently-born infant is least liable to be affected; the liability increasing up to a certain ill-defined period, to subsequently decline somewhat. The reason for this I shall endeavor to give later.

It is proper for me to state at this time that I acknowledge the infrequent occurrence of pulmonary inflammations from various bacteria, but pneumonia is due only to the pneumococcus. In this connection some pertinent facts pertaining to this germ require consideration: The pneumococcus is present in the upper respiratory passages of a very large proportion—probably 50 per cent.—of healthy persons. It is disseminated by being thrown into the air by coughing and sneezing and by the dust from dried and pulverized contaminated sputum from infected, but not necessarily pneumonic, individuals. As long as the pneumococcus remains in this locality it is usually innocent. If, however, it finds its way into the pulmonary alveoli pneumonia will probably result; if it finds its way into the blood and grows, pneumococemia follows. The pneumococcus is present in the blood in probably all cases of pneumonia. A child born of a pneumonic mother may be pneumococemic, and may quickly become pneumonic. I have examined the throat secretions of several recently born infants, but have always found them free from pneumococci. Later when these germs find lodgment in the throat, nostrils, etc., they remain persistently, if not permanently. For example, in several hundred examinations, I have not failed to find the pneumococcus in every person who has once had pneumonia, no matter how long the period since the attack.

The child, once the throat becomes infected with the pneumococcus, is in constant danger of an attack of pneumonia. From this it is protected by the integrity of the sensitive and alert respiratory reflexes. Should these barriers fail, as, e. g., in the profound sleep which may follow exhaustion, or exposure to excessive cold, etc., particles of pneumococci-laden throat secretions may be aspirated into the bronchi, to finally lodge in the alveoli, with pneumonia as the result.

When the alveoli have once become infected, severe symptoms promptly follow in the great majority of cases. In the midst of health, or after a few hours of indisposition, the child awakens from sleep, possibly at an unusual hour, with considerable or high fever, often with vomiting, and evidently seriously ill.

The temperature quickly reaches a markedly higher level than is usual in adults; from 103 to 105 F. is the rule; above 105 is very common; rarely is it persist-

ently under 103; irregular temperatures are very frequent. The pulse is rapid, rarely being under 130; usually ranging above 150; sometimes reaching 180 or 200; with exertion it may become almost uncountable. Respiration is increased in frequency, absolutely and especially in proportion to the pulse rate; rarely is it under 50; usually it ranges between 60 and 80; often it rises above 80, and may exceed 100. The normal pulse-respiration rate is reduced to 3:1, 2:1, or less.

Chill, which is so conspicuously the rule in adults, is absent in infants, and is infrequent in young children. Convulsions, of which we read so much, have been comparatively rare in my experience. They may have been more frequent a generation or two ago.

Pain is present and is manifested by indisposition to voluntary, and resentment to passive movements; by crying and featural expressions of pain, especially on being disturbed; by shallow breathing and an evident disposition to avoid nursing, and every exertion of movement which entails deep inspiration; by evidences of suffering on pressure being made on the abdomen or some portion of the chest. Cough is always present. It is usually short and evidently restrained; it is often heard only when the child is moved or fed, when it may be obscured by the cry, resentment and other evidences of accompanying pain; it is often so inconspicuous as to remain unnoticed by the attendants until attention is directed to it by the physician; it may be a very prominent feature. The well-known expiratory grunt is usually present.

The pneumonic infant usually persistently refuses food, and drinks only at long intervals and with evident reluctance. This is probably due to a disinclination to be moved, to the pain and distress caused by the deeper breathing required in nursing, and to anorexia. Gastro-intestinal disturbances are the rule. Intestinal distention may accompany a profound benumbing of the reflexes, and when followed by diarrhea is of ominous import. At the height of the attack the urine frequently contains albumin, hyaline and granular casts; sometimes red corpuscles; rarely hemoglobin.

The blood contains pneumococci; the serum becomes gradually more and more heavily laden with toxins, including agglutinins; leucocytosis occurs early in the vast majority of cases and continues well into convalescence, the increase being in the polynuclears.

The physical signs of pneumonia are present and discoverable, at some stage, in practically all cases. They may be late in appearing; extraordinary care and skill may be required for their detection; they may be found in unexpected localities. Diminution in the respiratory sound within a circumscribed area, with crepitation, when the child breathes deeply, as with crying, is usually the first sign to be heard. Crepitant râles may be remarkably distinct and exquisitely typical, or they may be indistinct, moist, soft and decidedly atypical. Bronchial breathing may not be audible, because of the weakened respiration; it may be moist and low-pitched; it may be limited to a small area in the back, even when extensive consolidation is present; it may sometimes be heard far beyond the affected region, even to the opposite lung. Friction sounds are heard infrequently, because of their short duration in many cases and the great care required in their detection. Dullness on light percussion is present whenever the consolidated area is of any considerable size. If percussion should be too forcible the dullness will be obscured, or even tympanitic resonance, as, e. g., from vibrations arising

in a distended stomach or intestine may be obtained. In any case the dullness is more accurately described as diminished resonance. In cases with delay in the appearance of physical signs they oftenest first show themselves high up in the axilla, or between the scapula and the spine, and I have been forcibly impressed with the frequency in which they may be detected by careful examination in these localities in cases in which they were supposed to be absent. In my cases the right lung has been oftener affected than the left, although the preponderance has not been as pronounced as in adults. The consolidation is oftener basal than apical. It is usually clearly lobar. Sometimes it takes on a spreading form.

Nervous symptoms are rarely inconspicuous. The child is dull, drowsy and apathetic, but resenting movements and other disturbance. Delirium is rare. Spasmodic twitchings, which cause pain, are frequent. Rigidity of the neck is usually due to otitis media.

Surface pallor is the rule; a natural color is present in some cases; rarely is there a persistent flush of the cheeks; cyanosis, except as a fatal termination is approaching, is uncommon. Various erythemas may be present at some time during the attack. Herpes is infrequent, although I have seen some remarkable examples. Icterus may be present in some rare cases, but it is usually slight and of a dusky hue.

The course, type, severity and danger of an attack of infantile pneumonia will vary in various localities and at different times, depending on the natural or acquired virulence of the strain of infecting pneumococcus. These modifications are so multitudinous as to defy any short analysis.

The duration is somewhat shorter in infants and young children than in adults. Short, evanescent cases are not rare; a duration of somewhat less than a week is the rule; protracted cases may be due to the successive involvement of lobe after lobe, with a moderate interval between, or, and this is oftener the cause of the delay, to an unrecognized, but not unrecognizable, empyema. The attack usually terminates by a rapid decline of all the symptoms, the physical signs continuing longer, the so-called crisis; a gradual and more prolonged ending—lysis—is not rare.

Serious complications are more frequently encountered in pneumonia of the young than in adults. Of these empyema is the chief. Pleurisy is the rule, with plastic fibrinous exudate, which produces adhesions in healing. In these cases there may be more or less abundant effusion of serum, with greater or less admixture of leucocytes and fibrinous coagula. These effusions may fill loculi in the plastic exudate, to be finally absorbed, but protracting convalescence and delaying recovery. The effusion may rapidly reach large proportions, when, with but little invasion by leucocytes, we have the serous pleurisy, which is much less common in children than in adults. If, on the other hand, leucocytes are very abundant, empyema is the result, which is the usual form assumed at this period. Although these are generally extensive, they are yet limited by adhesions, so that in few, if any cases, is the entire pleural cavity filled with the purulent fluid. In these cases the fever declines, but does not disappear, at the time when convalescence usually takes place, to soon rise again, with an irregular curve. The pneumococcus is the organism present in these cases.

If allowed to pursue their natural course, the pus evacuates into a bronchus, or externally, with, after a prolonged and prevarious convalescence, complete or

partial recovery, or the child is worn out and dies from exhaustion. Bearing in view the incidence of this complication, and the modifications of the auscultatory and percutory signs in children, these cases are usually recognizable. If in doubt, use the exploring exhaust needle without the slightest hesitation. As the result of sufficiently large experience, I desire to emphasize the importance of the facts here stated. It has been my observation that the great majority of cases of alleged "unresolved pneumonia" in children are, in fact, examples of empyema.

Otitis media, usually pneumococcic and purulent, is not rarely an important complication. It appears toward the end of or immediately after the pneumonic attack. One or both ears may be affected; rupture of the tympanic membrane is the rule; severe mastoiditis may occur; extension to the cerebral membranes or sinuses is rare. In these cases the mental dullness increases; pseudomeningeal symptoms may appear; rigidity of the neck is often, if not usually, present; tenderness is manifested when pressure is made on the lobe of the ear; recovery, without impairment of hearing, is the rule. Abscess, purulent pneumococcic pericarditis, peritonitis and arthritis are rare complications; ulcerative endocarditis and vascular thromboses are very rare.

The morbid anatomy of pneumonia in early life is modified by the structural and functional peculiarities appertaining to this period. The consolidation is clearly lobar, yet less prominently so than in the adult; it is also not so profound and the tissues are moister; the lobes are affected in a somewhat different proportion; resolution is more speedily completed.

Prognostically, pneumonia in the young is, at present, an unsolved problem. If conclusions are to be drawn from public health and institutional registration, it should be an exceedingly fatal affection; on the contrary, if we appeal to the results of our own clinical observations in private practice, especially of the better classes, I am of the opinion that this verdict must be revised and essentially modified; *id est*, that the fatality of pneumonia in the young is far below that of this malady in adults, and much less than is generally believed. In pneumonia at this period, as later, the changes of importance occur suddenly—the child gets better suddenly; gets worse suddenly; dies quickly and often unexpectedly; recovers promptly. Of the features of good import may be mentioned regularity of appearance and moderation of symptoms and course; absence of complications; slight or moderate virulence of the specific infecting germ. On the contrary, anomalous symptoms and erratic course; the appearance of serious complications; unusual virulence of the strain of pneumococcus, presage unusual or great danger. It is probable that recovery oftener follows an uncompromising assemblage of symptoms and conditions in the young than in those who are older.

The treatment of pneumonia may be faultlessly exemplary; it may be useless or harmless; it may be reprehensibly pernicious. The underlying principles of proper management may be stated, analyzed and formulated, but their application to meet the exigencies of the individual patient is an art which can not be transferred from one physician to another. In this field eminence in this art is attained only by those who have extraordinary native capacity, a broad foundation and keen perception of the pertinent facts and the advantages of long years of practice. Failure is usually due

to inherent incapacity, lack of necessary knowledge and restricted experience.

The fact that the pneumococcus in the blood and hepatized lung produce certain substances, which are as yet known only by their effects, e. g., the prompt occurrence of capillary dilatation and leucocytosis; later the appearance in the serum, within and without the blood vessels, of a specific agglutinin, and still later of a pneumococcic toxin, causing, within a short time, the disappearance from the blood of the pneumococcus, has led to the expectation that an antipneumonic serum would be produced which would promptly and directly cure the disease, but this has not been realized, although hope for the future remains.

Recently there have been made, by Drs. Welch and Rugh, in my wards some elaborate experiments, the objects of which were to demonstrate, if possible, the dynamic, not necessarily the curative, effects of the antipneumonic serums which are on the market. These observations are yet in progress and the facts have not yet been fully analyzed, but sufficient evidence has been obtained to warrant the conclusion that the effects are neither striking nor apparently important. The agglutinin is not noticeably increased; leucocytosis remains unaltered; the urinary chlorids are increased; the blood pressure is slightly augmented.

With our present knowledge it may be asserted that we have no specific for pneumonia; no agent which will certainly destroy the infecting organism nor render inert its toxins. However, there are certain prophylactic and remedial measures which are aimed directly at these points. For example: Keeping the pneumococcus-free child out of range of the infecting germ; avoiding exhaustion and too profound sleep in the pneumococcus-harboring child; cleansing the fluids of the body, intravascular and extravascular, of soluble toxins, in the pneumonic patient.

From the beginning the pneumonic child should be given liquids to drink as freely as they can be taken; in addition normal salt solution, modified possibly by the addition of coffee or other medicament, should be administered per rectum in such quantity and frequency as can be received, retained and absorbed. The presumption is that by these means the toxins in the blood and extravascular serosity is largely washed out, and that those which remain are greatly diluted. Theoretically, these devices should be useful; experimentally, we have no proof of their value; practically, I employ and advise them.

Beginning early, it is my practice to give moderate or large doses of a reliable tincture of digitalis, with the enemata if they are retained. Other vasomotor tonics and stimulants, e. g., caffein, adrenalin, etc., may be used.

If these little pneumonics have high fever, much dullness or restlessness, they are apparently made more comfortable, rational and normal by systematic sponge bathing. Personally, I prefer tepid sponging, followed by alcohol, repeated as often as required. This failing in its object, guaiacol, in suitable dosage, may be applied to the thin skin of the flexures as an efficient substitute. These may be advantageously supplemented by the ice-cap applied at intervals.

Oxygen inhalations are clearly useful when the patient is not fretted by their use. Strychnia, aromatic spirits of ammonia, etc., may be employed as required. In cases of profound nervous failure, with apathy, surface pallor, abdominal distension, the little patient

may sometimes be aroused by a stimulating glycerinated enema.

The medical attention and nursing should be assiduous and of the highest quality. The child should be disturbed as little as possible compatible with necessary attention. The purest, freshest and most comfortable air obtainable should be supplied.

Complications should receive prompt and careful attention, and in those requiring it (especially empyema) surgical relief should be given promptly.

DISCUSSION.

DR. A. C. COTTON, Chicago, endorsed Dr. Wells' therapy in supplying salines. He thinks the time has come when clinically as well as theoretically we can appreciate the importance of maintaining the alkalinity of body fluids, especially in a disease like pneumonia with high temperature and intoxication. This should be done either by enteroclysis, normal salt solution, sodium bichlorid, or if necessary by hypodermoclysis of normal salt solution. If absolutely necessary, intravenous transfusion may be employed. Dr. Cotton considers this a point that will bear a great deal of emphasis and one which is too often neglected.

DR. WILLIAM J. BUTLER, Chicago, said that pneumonia may be either of the lobar or lobular type. The diagnosis of lobar pneumonia in infancy, he thinks, can not be regarded as difficult, though it is usually so considered. Too frequently overlooking a pneumonia is the result of failure to examine the patient. The clinical picture of lobar pneumonia in an infant is quite as typical as it is in the adult. The physical signs are likewise typical for the child. He called attention to one point especially important among the physical signs in infancy: The diminution in the respiratory murmur over the affected area, especially noticeable in the first twenty-four or forty-eight hours. This is frequently the only early physical sign that is evident. Associated with it, however, there usually is a varying grade of diminished resonance sometimes quite marked, even within the first twenty-four hours. Râles are not so frequently heard early in the infant, as they are at a later period of childhood or in adult life; in fact, they are infrequent. The diminished respiratory murmur, sometimes almost complete absence of it, with diminished percussion resonance, are the most conspicuous signs of beginning pneumonia in infants.

DR. BUTLER thinks that rigidity of the neck in pneumonia can hardly be associated with middle ear disease, because it is a noticeable fact that in pneumonias during certain epidemics meningeal symptoms will sometimes predominate the whole clinical picture. In such cases middle ear disease may not be a noticeable factor. Middle ear disease does not manifest itself by opisthotonos in the young. He thinks, therefore, that physicians should continue to style this a pseudo-meningeal symptom.

DR. T. L. RILEY, New York City, has found that with the stethoscope modeled on the plan of the phonendoscope, in many of the so-called pneumonias in children, a diagnosis can be made twenty-four hours earlier than with the ordinary stethoscope. In lobar pneumonia in a child he does not think the mortality is more than 3 or 4 per cent. The pneumonia is not usually a true lobar pneumonia, but resembles catarrhal pneumonia. He thinks that it is customary to give up the old-fashioned poultices, but children generally find a great deal of comfort in these hot applications. Children and old people will generally tell you that they get more relief from these than from the use of an anodyne. The physician who loses the most pneumonia patients is the one who does not see his patients frequently.

DR. ARTHUR W. FAIRBANKS, Boston asked Dr. Wells to what he attributes the extreme fetor sometimes seen in these cases. This is sometimes so extreme that it is scarcely possible to stay in the room with comfort and sometimes continues for two weeks. In some of these cases the temperature lasts several weeks, and there is some uncertainty in his mind whether they should be diagnosed as cases of possible pulmonary abscess.

DR. JOHN LOVETT MORSE, Boston, declared that in the

young it is very important to differentiate between pneumonia in the infant and pneumonia in the child. Pneumonia in infancy is an extremely fatal disease, while in childhood it is a very mild one. He considers the pulse-respiration ratio the most important point in the diagnosis of pneumonia in infancy before the development of physical signs. When, in an infant, the rate of respiration is increased out of proportion to the rate of the pulse in an acute disease with a sudden onset and a high temperature, it is almost certainly indicative of pneumonia. In his experience, children with otitis media complicating pneumonia do not show symptoms pointing directly to the ear. The onset of trouble in the ear is more often shown by a rise in the temperature or else the child merely seems worse. Another point, he said, is the frequency with which the symptoms of pneumonia are referred by the child to the abdomen, or away from the lungs. Dr. Morse thinks that Dr. Wells did not emphasize sufficiently the importance of fresh air in the treatment. Dr. Morse put that first. If the patient has fresh air oxygen will rarely be needed. Dr. Morse does not use poultices except for relief of pain. It has been proved that heat and cold externally have no effect on the temperature or circulation in the pleural cavity. The recent work which has been done in France and in this country on the effect of chlorid of sodium when introduced into the system must be borne in mind. Physicians may be taking chances in giving large amounts of salt solution, as its action may be harmful instead of beneficial. Moreover, the heart is already under great strain and is bearing the brunt of the battle. Throwing a lot of fluid into the circulation makes the heart's work harder instead of relieving it.

Dr. A. C. COTTON, Chicago, said that when the right heart becomes overburdened, when dullness extends beyond the right sternal border two fingers' breadth in the fourth interspace, he believes it is time to extract a little blood from the circulation. This may be easily done by leeching, an old-fashioned procedure too frequently neglected. Relief for thirty-six or forty-eight hours may be secured by the application of from three to four leeches, in a child of 2 years, placed over the right hypochondria, and this procedure may be repeated at the end of forty-eight hours if necessary. Dr. Cotton said that he fully appreciates what has been said concerning the overloading of the heart with water, but he believes that the salines should be used by enteroclysis or by hypodermoclysis to meet the waste of alkalinity in the fluids.

Dr. EDWARD F. WELLS, in reply to some remarks, said that in his opinion increasing the alkalinity of the blood in pneumonia is a procedure which may be useful, detrimental or innocuous. He has noted carefully the work which has been done along this line, and is sure that it is in the early stages of investigation, and that we have not sufficient facts before us at the present time to say whether or not we should increase, if possible, the alkalinity of the blood. It is well known that the pneumococcus grows most luxuriantly in an alkaline fluid, and that it produces an acid in its growth. Whether that acid should be neutralized or not is an open question. He intentionally omitted any mention of methods of treatment which are in this investigational period. In regard to increasing the sodium chlorid in the system, he said that this is another question which is in its investigational period. He believes, however, that inferentially it may be considered useful. One of the first and most important symptoms of pneumonia is the decline, as a rule almost to absence, of chlorids in the urine. This is more noticeable in the adult than in the infant, because of the naturally small proportion of chlorids in the urine in the latter. We may infer that this diminution of chlorids in the urine is because of the advantage that their retention might be in neutralizing toxins, or in some way acting as a defense to the system. He is in the habit of giving chlorids as freely as possible, but he does not advocate their intravenous injection. If the solution can not be borne by the stomach or rectum it can be introduced under the skin. He is familiar with the experimental work done in introducing chlorids in large quantities, and the alleged danger of producing edema thereby, yet he has no hesitation in pursuing the practice mentioned. In reply to Dr. Morse's criticism anent fresh air, Dr. Wells stated

that he had emphasized the point as much as possible in stating that an abundance of comfortable pure air is of the highest importance. He said that he is not aware that there are any facts before us which can lead us for a moment to believe that uncomfortable air—overheated or overcooled—is more pure, more wholesome or more beneficial to the patient than that mentioned. He said that he wished to emphasize this point as much as he could, as he feels keenly on the subject. In reply to a question he stated that there is not sufficient evidence on which to base an opinion in regard to fetor of the breath. In some cases it is due to the fact that the child does not breathe through the nostrils. The mouth remains open and the secretions in the throat and nose become fetid. In Dr. Wells' experience the majority of cases in which there was rigidity of the neck were accompanied by otitis media, but in otitis media the neck is not uniformly rigid. Rigidity of the neck in his experience has been found most frequently in connection with otitis media. He thinks Dr. Riley's prognosis is too favorable and that his mortality is placed at too low a figure. Dr. Wells believes that what he has said about prognosis of pneumonia in the child, and the facts noted in the statistical portion of his paper will answer this portion of the discussion fully.

SURGICAL ASPECTS OF DISTURBED DENTITION OF THE THIRD MOLARS.*

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The third molars generally make their appearance between the ages of sixteen and twenty. The final development of the length of the maxillæ posterior to the mental foramen in the lower jaw and maxillary sinus in the upper, takes place during this period, and in this manner sufficient space is provided for the proper alignment of the third molar when it breaks through the gum tissue. When this development proceeds without any disturbing constitutional causes, no difficulties attend the eruption of these teeth. As, however, all inflammatory actions that arise during this period either from local pathologic causes or by virtue of constitutional disturbances, have a marked effect on the osseous development of these parts we find the normal type of development to be the exception. These departures from a purely normal type vary greatly according to the amount of disturbance that has taken place, and in a large number of cases interfere with the normal eruption of the third molars. This interference with the eruption of these teeth is confined more particularly to the lower jaw. The reason for the lower third molar being exceptionally liable to serious disturbances is due to the difference in the anatomy of the two jaws. On account of the limitations of time and small percentage of troubles encountered with erupting upper molars, these remarks will be confined strictly to the inferior teeth.

The necessity for sufficient room at the angle of the body and the ramus is shown in Fig. 1 (Crver). Fig. A shows the mandible of one of the Fan tribe of West Africa, and there is abundance of room for the third molar. Fig. B is a picture of a Caucasian lower jaw of normal type where there is just barely sufficient room for the third molar. The lessening of this amount of space is one of the most prolific sources of disturbed dentition in this locality. Too frequently there is no room left between the second molar and the ramus, and as a result the third molar finally erupts in some unusual position. During this effort at unnatural erup-

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