these cases, Nos. 1, 3, 4, 6, 8, 10, 11, 12, 14, 15, 17, 18, 19, 20, 22, 23, 25, 26, 27 and 28, which constitutes 60 per cent. of the total.

Our observations are too limited to draw any very definite conclusions as to the nature of the relations between acne vulgaris and gastro-intestinal abnormalities but we feel that our results show that the well established clinical observations as to the association of these conditions have, in many cases, a well-founded pathologic basis.

CONCLUSIONS

1. Acne vulgaris is generally conceded to be caused by the presence and growth of the acne bacillus.
2. There are a number of predisposing factors to this disease, one of the most important of which is gastro-intestinal derangements.
3. In a series of thirty cases of acne vulgaris, which were examined from the gastro-intestinal side, by test meals and fluoroscopic observations, we found that none of them gave absolutely normal findings, and that 60 per cent. of the cases showed abnormalities which were of such a nature as to permit gastric and intestinal stasis followed by toxic absorption.

529 North Charles Street—1100 North Charles Street.

ABSTRACT OF DISCUSSION

DR. MICHAEL LEO RAVITCH, Louisville, Ky.: While the gastro-intestinal tract may have some influence as a causative factor in acne, I do not believe it is a very potent one. Judging from the fact that acne usually makes its appearance about puberty, I think the gastro-intestinal tract can be ruled out as a very important or primal factor. About this period of life glandular activity is very marked; but what causes this glandular hyperactivity we do not know. I have seen many cases of acne that failed to improve under various modifications of diet, no matter how strictly they have been followed.

DR. H. H. HAZEN, Washington, D. C.: From the results of this work we are justified in deducing at least one conclusion, namely, that stasis or other abnormal conditions of the gastro-intestinal tract are not such important factors in the causation of acne vulgaris as some writers would have us believe.

DR. WALTER J. HEIMANN, New York: Dr. H. J. Schwartz and I found hyperglycemia in 60 per cent. of the seborrheas, including acne. In a very large proportion of cases of acne there are gastro-intestinal disturbances, chiefly either hyperacidity or carbohydrate fermentation. It is possible that these may be associated with the disturbed sugar metabolism. Perhaps a combination of these ideas with those outlined by Drs. Ketron and King will ultimately lead us to an understanding of the underlying cause, if not to that of the local cause, which may be the acne bacillus.

DR. LLOYD W. KETRON, Baltimore: We have no claims to set forth. We simply wish to present the facts for what they are worth. It is probable that patients with eczema or some other skin diseases may show just as high a percentage of intestinal derangements as do acne cases. Our figures show that a large percentage of these patients suffer from intestinal stasis and retention, and under these conditions we would be more apt to meet with deranged protein metabolism.

Superstition.—In some parts of France there was formerly a custom of covering a newly born infant with salt in order to conduce to longevity; the salt was allowed to remain on for two or three days, and then was washed off with wine and water. The academician St. Aulaire was so treated as an infant, and undoubtedly lived to be very old. Pythagoras regarded honey as conducive to long life, and, according to Hufeland, the Egyptians prescribed courses of emetics with the same object.—Saundby.

New Instruments and Suggestions

USE OF CITRATED PLASMA IN TISSUE CULTURES

PRELIMINARY REPORT*

N. CHANDLER FOOT, M.D., BOSTON

Instructor in Pathology, Harvard Medical School

The Burrows-Carrel method of cultivating tissue in coagulated plasma at body temperature¹ is already so well known that in describing a modification of it I shall merely touch on those points in the procedure which are affected thereby.

While the method gives almost perfect results in the laboratory in connection with animal experimentation, it unfortunately has its drawbacks when one wishes to apply it to work on the human subject in the hospital. In the first place, one must have a powerful centrifuge at hand, so that the blood may be centrifugized without loss of time; otherwise it is apt to clot during the process. If the donor can come to the laboratory, this is easy; but if the blood is to be collected in a distant ward and brought to the laboratory, one often finds it clotted on removing it from the machine. The necessity of providing cracked ice or snow is often rather inconvenient, and the fact that this frequently melts almost completely during centrifugalizing makes it liable to spill into the tubes and contaminate their contents. Lastly, the necessity for paraffining and chilling all the glassware used during the preparation of the plasma is also more or less troublesome.

While one is working in a hospital it is not always easy to be on hand when a venesection is to be performed, nor is it always possible to be ready with cracked ice and paraffined glassware at such a time. On the other hand, as venesections are frequently done, or blood is obtained for Wassermann or other tests by the hospital staff, it occurred to me some time ago that it would be very easy for an intern to obtain such blood at any convenient time were it treated with some anticoagulant, such as sodium citrate, and set aside till wanted by the experimenter.

It has been shown that such blood can readily be re-coagulated at will by the addition of a solution containing calcium; and modern researches on transfusion have demonstrated the tolerance of the human organism for citrated blood. The conclusion is obvious: why not use citrated plasma for cell cultures, re-coagulating it on the coverslip by the addition of a calcium solution? To test out the feasibility of this idea, I began experimenting along these lines with perfectly satisfactory results, apparently in no way inferior to those obtained by the use of the original method.

The blood to be used is collected in tubes or flasks containing enough of a 0.2 or 0.3 per cent. solution of sodium citrate to make the total amount of the mixture contain one part of this to nine parts of blood. It may be drawn direct from the vein, through a cannula (preferably oiled), or into a syringe containing a sufficient quantity of the citrate solution, care being exercised to insure a thorough mixture of the blood with the citrate solution. The blood so collected is then centrifugized for from ten to fifteen minutes in a powerful machine (the ordinary hand centrifuge is usually too slow for this work), and the resulting plasma decanted or pipetted into a flask which is then put away on ice, or in a cool place until wanted. I have always used paraffined flasks for this purpose, as the paraffin tends to prevent clotting. It will remain fluid and usable for a considerable time, a week or two at any rate.

The cultures are prepared in the usual way, a drop of the plasma being mixed on the coverslip with an equal amount of Ringer's or Locke's solution, the amount of calcium chlorid in these being increased ten times (from 0.025 to 0.25) in order to provide the excess of calcium necessary to overcome

* From the Department of Pathology, Harvard Medical School, and the Pathological Laboratory of the Peter Bent Brigham Hospital.

1. Abderhalden, E.: *Handbuch der biochemischen Arbeitsmethoden*, 1912, v, Pt. 2. Carrel, A., and Ingebrigtsen, R.: *Jour. Exper. Med.*, 1912, xv, 287.

the anticoagulant action of the sodium citrate. Further experimentation may prove that a lesser amount of calcium will be equally effective; it is certain, however, that the usual percentage of calcium chlorid present in Ringer's or Locke's solution is insufficient to bring about prompt clotting. The addition of the tissue particle to a drop of pure undiluted citrated plasma is often sufficient to bring about coagulation after a considerable length of time; the clot thus formed is, however, of very soft consistency, and not so suitable for subsequent fixing and staining as are those prepared with the excess of calcium chlorid. It has been customary to use some tissue extract, preferably embryonal, as an activator to cell growth. In preparing such an extract I have employed the modified Ringer's or Locke's solution described above, using 1 drop of the extract to 1 drop of citrated plasma.

Thus far I have experimented chiefly with human carcinoma (ovarian and intra-uterine), obtaining satisfactory cultures in the majority of cases. These were in every respect similar to the cultures of mouse carcinoma described by various experimenters, and they also resembled the cultures of human carcinoma hitherto described, save in one respect; there was no liquefaction of the plasma clot under one week, whereas in the original method this occurs within a day or two. The cells grew out from the implant in sheets of one or more layers in every way similar to those seen in peritoneal and lymphatic extensions of carcinoma in the human body. The stroma participated in the growth, but was never a predominant factor. Nuclear figures were plentiful in the carcinoma cells and present in the stroma outgrowths; they were very irregular and atypical in many cases; but a large number of typical mitoses were found. It is possible to carry out all the steps of tissue cultivation, such as transplantation and washing, the use of citrated plasma in no way interfering with the processes as formerly practiced. Fixation and staining are likewise not affected thereby.

TAKING FOOTPRINTS WITHOUT INK

J. H. TAYLOR, Washington, D. C.

A maternity hospital in Chicago has adopted the footprint as a means of identifying its tiny charges. The Chicago hospital takes the footprint of every infant that is born or brought there before the baby is an hour old. The present way of obtaining a baby's footprint is to spread some printer's ink on a printer's roller and run it over the baby's foot; then the foot is pressed against a sheet of white paper, which leaves the impression desired. After the impression is obtained, the ink remaining on the baby's foot has to be removed by washing with absorbent cotton saturated with alcohol or benzin.

In order to obviate the use of ink, the baby's foot should be rubbed with cold cream. Then a sheet of plain white paper is pressed against the bottom of the foot so that the entire surface of the sole of the foot comes in contact with the paper. After this is done powdered charcoal is spread with a camel's hair brush over the surface of the paper touched by the baby's foot, which will bring the latent impression out as plain as if taken in the old way with ink. By this process the same result is obtained and the infant's foot is not even soiled. The impression obtained, if placed in an envelope, will keep until the time when the mother and infant are ready to leave the hospital. An impression made by using powdered charcoal takes less time than by the use of printer's ink. This method could also be used to determine the degree of flatness of a person's foot.

516 Navy Building.

Liver Pills.—Liver pills (they do not act on the liver) are usually distinctly harmful in the conditions for which they are usually taken, sluggish bowels. *Once a liver pill taker, always a liver pill taker, is the rule.* A condition which often can be readily corrected by proper diet and exercise is thus rendered chronic and sometimes almost incurable by remedies advertised to relieve it.—*Health Letter*, Life Extension Institute.

Special Article

FOURTEENTH ANNUAL SUMMARY OF FOURTH OF JULY INJURIES

For the fourteenth consecutive year, THE JOURNAL presents statistics of deaths and injuries resulting from the celebration of the Fourth of July. With the rapid decline in the number of casualties in the last few years, instead of relaxing its vigilance, THE JOURNAL has made extra effort to secure complete and accurate data. Blanks sent to hospitals for reports were returned with short lists or with the statement that no cases whatever were treated. Health officers, also, who formerly sent in long lists of killed

TABLE 1.—TETANUS CASES BY STATES
Comparison with Previous Years

	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	Total
Alabama.....	..	..	1	..	..	..	..	..	..	..	..	..	..	1
Arizona.....	..	..	..	..	1	..	..	..	..	..	..	..	..	1
California....	2	4	4	3	1	..	2	1	2	1	..	..	..	20
Colorado.....	4	..	1	..	..	..	..	..	..	..	..	..	..	5
Connecticut..	3	..	3	..	4	1	..	..	..	..	..	..	..	11
Delaware.....	..	..	1	1	1	..	2	..	..	..	..	..	..	5
Dist. of Col.	1	..	..	..	..	..	..	..	..	..	..	..	..	1
Florida.....	..	..	..	..	..	..	1	..	..	..	..	..	..	1
Georgia.....	..	..	..	..	1	..	..	..	..	..	..	..	..	1
Idaho.....	1	..	..	..	..	..	1	..	..	..	..	..	..	2
Illinois.....	49	15	20	16	12	12	20	10	3	..	..	..	..	157
Indiana.....	11	6	3	8	2	..	9	6	..	1	1	..	..	47
Iowa.....	14	2	3	4	4	1	1	1	1	..	..	..	..	31
Kansas.....	11	1	..	..	2	1	6	..	..	..	1	..	..	22
Kentucky.....	4	2	..	1	..	1	1	..	..	..	..	1	..	10
Louisiana....	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Maine.....	2	4	1	1	..	1	1	1	..	..	..	1	..	12
Maryland....	1	..	1	1	..	..	2	1	..	..	..	..	..	6
Mass.....	16	5	7	3	2	5	8	..	1	1	..	..	..	48
Michigan....	29	7	9	4	4	2	11	11	2	1	..	..	..	80
Minnesota....	15	2	2	2	2	..	..	..	..	..	..	1	..	24
Missouri.....	29	1	3	3	1	5	8	2	..	..	..	..	..	52
Montana.....	2	1	1	..	1	..	3	2	..	..	..	..	..	10
Nebraska....	4	3	3	1	..	1	3	1	..	..	..	..	..	16
New Hamp....	2	..	..	1	..	..	1	..	..	..	..	..	..	4
New Jersey..	8	9	3	10	8	10	19	9	2	..	..	1	..	79
New York....	36	9	6	8	4	9	11	7	1	..	2	..	..	93
N. Dakota....	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ohio.....	67	9	5	7	6	7	12	3	3	..	..	..	..	119
Oklahoma....	1	..	1	1	..	1	..	1	..	1	..	..	..	6
Oregon.....	2	..	..	1	1	1	..	..	..	..	..	..	..	5
Pennsylvania	82	17	12	5	7	7	10	11	1	..	..	..	..	152
Rhode Isl...	3	..	..	1	..	..	..	..	..	..	..	..	..	4
S. Carolina..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
S. Dakota....	..	..	..	..	..	1	1	..	..	..	..	..	..	2
Tennessee....	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Texas.....	..	..	..	..	2	..	..	..	..	..	..	..	..	2
Utah.....	..	1	1	..	..	..	1	..	..	..	..	..	..	3
Vermont.....	3	2	..	2	2	..	..	..	..	..	..	..	..	9
Washington..	2	1	..	..	2	4	4	1	..	..	..	..	..	14
W. Virginia.	3	..	..	2	..	1	4	..	..	2	..	..	..	12
Wisconsin....	10	4	13	2	3	5	9	3	2	..	..	..	..	51
Wyoming....	..	..	..	1	..	..	..	..	..	..	..	..	..	1
Total.....	417	105	104	89	73	76	150	72	18	7	4	3	1	1,119
States having cases..	30	21	23	25	23	20	25	18	10	6	3	3	1	

and injured, likewise had no names to report. On many of the blanks was written the significant statement: "We had a safe and sane Fourth." The data are presented in the same manner as heretofore, and in each table the comparison shows the remarkable decrease during the last few years in the number of deaths and injuries from the use of fireworks.

FIRST YEAR WITHOUT A LOCKJAW VICTIM

This is the first year in which not a single case of lockjaw was reported. A few cases were reported, in which it was feared tetanus would result, but the prompt use of antitoxin as a prophylactic doubtless prevented it.