and that they were becoming fully alive to the dangerous character of these mixtures. This was shown practically in the fact that the sale of "patent medicines" had decreased enormously throughout the country; and was also reflected in the public press, which now published frequent accounts of poisoning from headache powders and other nostrums, recognizing that the public was interested.

Success had not been so marked in regard to getting the enactment of legislation. He wished that every state could accomplish the legislation which Massachusetts had just inaugurated, by which cocaine could be sold only on a doctor's prescription and could not be an ingredient of any copyright mixture whatsoever; morphin could be present only in the proportion of one-fourth gr. to the ounce of solution; and alcohol could be used only in sufficient quantity to act as a solvent. This was certainly a long step in the right direction, and must, if enforced, be the death blow to the alcoholic nostrums and to many others containing cocaine and morphin.

The most interesting and difficult phase of the subject and the field for their most legitimate efforts, was in the relation of the profession to proprietary medicines. Their use by physicians appeared to be increasing rather than diminishing. This arose from two things, carelessness and ignorance. Credit must be given to the manufacturing chemist for putting out very elegant mixtures, some of them with the formula on the bottle, and for the temptation thus held out to use them. But as Dr. Billings had well said: "To the rational physician, mixtures even with a known formula are objectionable, for disease is never quite the same in different individuals and never quite the same in its different stages." Dr. Francine thought that too many members of the profession did not appreciate their responsibilities in this regard. He thought that the medical schools did not do their full duty in training their graduates in the arts of pharmacology and therapeutics, and in prescription writing. Graduates did not know how to write prescriptions, how skillfully to combine drugs, and did not, as a rule, subsequently familiarize themselves with them. Every graduate, even after a term of service in a large hospital, should diligently apply himself to this study, and it was because this was not generally done that they fell back on ready-made preparations. He thought there was justification for criticism of the usual methods of teaching therapeutics in the medical schools, though this phase of it was a difficult problem for the latter to handle or adjust properly. The physiologic action of drugs and prescription writing should be taught in close relation to their clinical application. It seemed folly to teach the use and action of the nitrites to second and third-year students, when they had little or no familiarity with the diseases in which they were indicated, and yet this was the usual course. It would seem wise, if the physiologic action of drugs must be taught at that time to supplement such theoretical teaching by practical work in prescription writing and prescribing in the fourth year directly to clinical cases in the wards and dispensaries.

DR. LOUIS LEROY, Nashville, Tenn., said that the speakers were laying all of the trouble, or most of it, at the door of the practicing physician, as if he could revolutionize public opinion. He said that he had found that the attitude of the public man now was about reflected by the attitude of the medical man of some one hundred years ago; it took one hundred years to come to the attitude and it probably would take another hundred years to come to the attitude of the medical men of to-day. While they might take some decided step, he felt only moderately sanguine over diminishing to any marked extent the public use of nostrums. Another thing he said should be borne in mind: the medical student came to them in the mental attitude of the general public and in that student they must build up this work. A great thing that had been lacking so long in medical schools was common "horse sense," as well as the ability to correlate what they got. Some of this could be cultivated to a certain extent, although some never would, and some never could. He said they were at fault in medical teaching, in that they did not teach medical students how to put two and two together.

DR. RICHARD C. CABOT, Boston, in answer to what was said

regarding placebos, said that he would charge no man with what he had not done himself and that he had given bushels of placebos, as all doctors do, to impress the patient. But when they gave placebos they were in precisely the same attitude as the quack. They were pretending to possess remedies and powers which, in fact, they did not possess. Dr. Cabot added that placebos were lies, because if they explained to the patient that they were inert and given solely to influence his symptoms through his mind, they would then be useless. It was only when they led the patient mistakenly to suppose that these inert drugs had genuine medicinal action, that they work on his mind. They should all do as Grover Cleveland, at the last annual meeting of the Medical Society of the State of New York, entreated them to do, namely, treat their patients like intelligent human beings; be open with them, be fair with them, treat them as they would want to be treated if they were sick.

DR. GEORGE DOCK, Ann Arbor, Mich., said that he would limit his remarks to the question of patients. He was prepared for the objections made against the patenting of medical inventions, and, in fact, expected even greater objections. He had at one time shared the views so clearly stated by Dr. Thayer. He thought that conditions had somewhat changed and that the objection to the patenting or dispensing of a secret preparation could not apply to the patenting of a discovery or invention of a new principle. A good deal has been said about the fact that Jenner did not take out a patent on vaccination. It would have been a great deal better for vaccination if Jenner had. He himself complained of the harm that was done by careless and ignorant vaccinators. If he had been able to control the standard of vaccine and the method of vaccinating for a few years, the result might have been very much better. A patent made the material public, or open, so far as its composition was concerned. He thought it was unfortunate that in this country they were able to patent the product. It would be very much better if the right were limited to patenting the process. Invention would be stimulated in still further perfecting the product. If a physician did not wish to take money derived from the patent of an invention it would be an easy thing to forego his royalties. On the other hand, if it is wrong to take out a patent on a remedial agent it would seem to be equally wrong to use the patented article. Dr. Dock said that he had not used ammonol, but confessed to having used Behring's antitoxin, adrenalin and modified milk, all of which he was informed were patented. He did not believe that these would have been any worse if patents had been held by physicians.

CIRRHOTIC CHANGES IN THE LIVER FOLLOWING A SINGLE INJURY.*

W. G. MACCALLUM, M.D.

Associate Professor of Pathology, Johns Hopkins University.
BALTIMORE.

It is well known that various poisonous materials circulating in the blood may cause the destruction of the cells of the liver, sometimes in very small foci, sometimes much more diffusely throughout the whole organ. In many cases, as has been emphasized by Opie, this destruction may occur fairly regularly in certain portions or zones of the lobule, while in other cases it is difficult to determine any such regularity.

Necroses of similar type may be produced experimentally, as shown by Pearce and others, but they most commonly occur in the course of acute infections and intoxications. When limited in extent they may destroy so little of the liver that no definite symptoms result and the injured area is in time replaced by scar tissue, the remaining liver tissue becoming hypertrophied to

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

compensate for that which was lost. This process may become a more or less continuous one if the source of the poison persists, and the final result of such repeated injuries and healings is one or other of the varieties of cirrhosis of the liver. The changes involved in this I have discussed in detail in a previous paper.¹

When the injury to the liver tissue is very extensive and involves at one time the greater part of the liver, symptoms at once arise, and such a condition which is commonly classed as acute yellow atrophy may quickly bring about the death of the patient. Recovery sometimes occurs, and the reparatory changes in the liver in such cases have been minutely studied. One case of this kind was reported in detail,² and since that time another case has come to my notice. This second case was that of a child who died of peritonitis following appendicitis, but who had otherwise always been well except for an attack of scarlet fever some months before. At autopsy the liver was found to be extraordinarily distorted by the presence of large prominent nodules of grayish, swollen-looking liver substance, each surrounding a central branch of the portal vein. Between these masses the tissue was shrunken and fibrous and dark grayish red in color. Microscopically there were found conditions entirely analogous to those described in the published case, i. e., in many areas the collapsed scarred framework of the liver with proliferating sprouts from the bile ducts; in other places the greatly enlarged liver lobules which had resulted from the hypertrophy of those lobules which remained uninjured.

The aim of this note is merely to show what must be almost obvious, that there may occur a scarred condition of the liver perhaps intermediate between the ordinary cirrhosis and the extraordinary distortion just described, a condition, in other words, in which some single attack of an infectious disease or some single intoxication has produced a single non-progressive, though widespread, injury from which complete and permanent recovery has occurred.

Such livers present, in general, a smooth, even surface, interrupted only by a network of fine linear grooves, which are also seen on section and which indicate the places where destruction of the liver cells took place. The remaining tissue in two cases which we have studied was composed of lobules perfectly normal in form, but rather larger than the normal. Microscopically, but little proliferative change in the bile ducts are to be observed, and it appeared, indeed, that in these cases but little definite scar tissue had appeared, the depressed lines being composed of atrophic and collapsed liver tissue in which the blood capillaries were separated by scale-like remains of liver cells only.

Similar conditions have been observed in a case of pernicious anemia and in a case of myelocytic leukemia in which the livers were found to present, evidently as the result of a single injury, ramifying bands and lines in which the epithelial cells had been destroyed so that the framework of the tissue had collapsed into a red, vascular, spongy substance, while the remaining uninjured liver tissue stood out prominently in the form of opaque, yellowish-gray masses, with normal or somewhat enlarged lobulations.

These are rather extreme cases, but there are many cases in which, although no symptoms referable to the liver were noted during life, the autopsy revealed a liver

practically normal, except for the presence of irregular, fine lines of scar tissue throughout its substance. These are commonly recognized as cases of incipient cirrhosis, and, indeed, it can not be denied that they are cases of cirrhosis, but we have no evidence whatever that the condition is part of a progressive process. From the normal state of most of the liver tissue it seems far more probable that we are dealing, not with the beginning of an advancing cirrhosis of the liver, but rather with a finished or stationary condition which has existed unchanged, since the injuries to the liver produced in the course of an attack of some infectious disease in earlier life were permanently healed. In other words, the condition differs from ordinary cirrhosis merely in not being progressive and in representing only the scars of an old injury.

DISCUSSION.

DR. W. OPHÜLS, San Francisco, believed with Dr. MacCallum that the importance of the regenerative and reparatory changes taking place in cirrhosis can not very well be exaggerated, but he would not go so far in giving the interstitial changes an entirely secondary position. His contention is based very largely on some experiments which he has been doing on chronic nephritis. For his experiments he used guinea-pigs and dogs, feeding them certain well-known poisonous substances which affect the kidneys, and the specimens show that, although there are degenerative changes with the interstitial processes which were observed, they are hardly marked enough to be regarded as primary, nor is there any direct local relation between the two, the degenerative changes being diffuse in character and the inflammatory changes being localized in certain parts. It is certainly true that in these chronic inflammations degenerative and reparatory changes in the epithelium play a very important rôle in the production of the anatomic picture.

DR. HENRY A. CHRISTIAN, Boston, asked Dr. MacCallum what in these lesions he considered the possible determining feature of the attack on the periphery of the lobule in the light of the fact that most acute conditions attack the center of the lobule. Such, at least, had been the distribution of acute necroses in his cases. He also asked what Dr. MacCallum thought about the endothelial type of cell which appears, that is, the cell which morphologically resembles an endothelial cell; whether he regards such cells as true endothelial cells.

DR. MACCALLUM said that he was convinced that the only instance of primary trouble is of the highly organized tissues. He can not make clear himself any constricting effect on the liver tissue. In regard to Dr. Christian's remarks, he thought that necrosis of the liver is different in arrangement at Baltimore from what it is in Boston. He has been struck by the relative rarity of the central lesions. As to Dr. Christian's second question, he does not regard these as endothelial cells or that they go to the formation of any blood vessels.

DR. HENRY A. CHRISTIAN, Boston, agreed that what Dr. MacCallum said about the difference between Boston and Baltimore is true. This was brought out when Dr. Opie read his paper in Washington on "Zonal Necroses of the Liver." Dr. Christian said that he felt rather badly because he thought that this condition might have been overlooked in Boston, but he came back and went over something like 2,000 cases and found only central necroses. He can not explain why this difference exists. The types of cirrhosis in Baltimore and Boston are practically the same.

Electric Signal for Wet Diapers.—We learn from an exchange that the Exhibition of Hygiene recently held at Vienna contained a practical device, the invention of Professor Pfaundler, to aid in the care of infants. It is an electric contrivance with dry elements and a small wire pad. The latter is placed in the child's diaper. As soon as the diaper becomes wet the circuit is closed and an electric bell rings until dry conditions are restored.

1. MacCallum: "Regenerative Changes in Cirrhosis of the Liver," THE JOURNAL A. M. A., Sept. 3, 1904.

2. Johns Hopkins Hospital Reports, vol. x.