that, whatever men may be in other things, they are not "mostly fools" in regard to the plan of their meals.

The common order of courses in a plain dinner is soup, fish, joint, pudding, bread and cheese, and dessert. The reason why soup comes first, has been admirably shown by Schiff in his experiments on digestion. This physiologist found that the stomach of an animal which some time before had digested a full meal, had very little power to digest albumen introduced directly into it; and a similar fact was ascertained in regard to an extract made from the stomach itself, this extract hardly acting on albumen at all. The stomach seemed to be exhausted by the effort of digesting a full meal several hours before, and to be incapable of producing pepsine. But if certain substances were introduced first into the stomach, the power to digest albumen was enormously increased. To these substances Schiff gave the name of "peptogens," and the most powerful of them he found to be dextrin, and soup made from meat.

If the human stomach resembles the stomachs of animals in this point as it does in others, then we may say that usually the power of the stomach to digest such substances as hard boiled eggs or boiled meat, when these are taken alone, will be very slight. But if the meal be begun with a plate of soup and a piece of bread, the bread partly converted into dextrin in the mouth, and the extractive matters of meat contained in the soup, on reaching the stomach, will be absorbed, and will supply to the gastric follicles the power to secrete an abundance of pepsine. In this country, where our butcher's meat is tender and juicy, we not unfrequently find that people in the middle of the day will take a beef-steak or a mutton-chop without soup. In this case, the savoury soluble substances are quickly extracted from the meat in the stomach itself, and, being absorbed, supply the necessary secreting power to the gastric glands. But in other countries, where the animals slaughtered for food are often old and tough oxen, which have been employed for years in agricultural service, the meat, being less savoury and juicy, will not yield peptogenic matters so readily to the stomach. Consequently, the Frenchman generally boils his butcher's meat thoroughly, and adds pieces of bread to the soup with which he begins his meal, so that the stomach can absorb sufficient peptogenic substance before the hard and tasteless boiled beef is swallowed.

Next to the soup, as I have said, usually comes fish, which is digested more easily than butcher-meat. I have already mentioned, more than once, that the rapidity with which anything dissolves depends very much on the fineness with which it is divided. Now, this is quite true of the different kinds of meat. Beef is acknowledged to be less digestible than mutton, and mutton less digestible than fish. The breast of a chicken is also reckoned very digestible. If we compare these different kinds of flesh, we will find that in beef the fibres are longer and harder than those of mutton, and those of mutton longer and harder than those of the breast of a fowl. The muscle-fibres in fish are arrayed in flaky masses, and are not only very short, but are very readily separated from one another. We see, then, that the different digestibility of these different kinds of meat corresponds exactly with the readiness with which the muscle-fibres can be broken up mechanically. That it is the physical conformation of the muscle-fibres, rather than anything peculiar to the animal from which they are derived, is shown, I think, by the fact that, although the breast of fowls is universally acknowledged to be readily digestible, the legs, in which the muscular fibres are long and hard, are by no means specially adapted for weak digestions. With the meat, come vegetables, which are not only useful as supplying inorganic salts, but probably play a considerable part in aiding the recomposition of peptones into albuminous material of the tissues, after their absorption. After the meal come the bread, cheese, and dessert. The bread will, no doubt, supply additional dextrin, and the cheese additional albuminoids; but, if we direct our attention only to the stomach, and to the chemical changes which are going on in it, it is not quite easy to see why bread, cheese, and dessert should be taken at the end of dinner. If we turn our attention, however, to the circulation and the nervous system, and remember the effect which I have already mentioned as produced upon them by the mastication and deglutition of savoury food, we can at once see a good reason for the common manner of terminating a dinner. In order to supply abundant gastric juice for the digestion of the food introduced into it, the stomach requires an abundant supply of blood, and the nervous system must be kept active in order to respond to the calls made upon it. The savoury cheese, swallowed in small morsels, and the sweet fruits, which strongly stimulate the nerves of taste, or nuts, which require considerable mastication, cause an abundant flow of blood to the nerve-centres; while the frequent movements of swallowing stimulate the heart, and increase the rapidity of the general circulation.

In the case of ordinary meals taken by a healthy man, the food is

quite sufficient to stimulate the various parts of the digestive canal, the nervous system, and the circulation sufficiently to insure complete digestion. But if the meal be more than ordinarily heavy, if the person be exhausted by long fasting, by severe exertion, or have a weak digestion, other aid must be invoked. One of the most powerful stimulants, both to secretion and the circulation, is alcohol; and we find that persons of weak digestion sometimes take sherry and bitters before a meal, or take a glass of sherry with their soup. During the course of a meal, an effervescent wine like champagne is taken, the carbonic acid of which will stimulate absorption, while at the end a powerful stimulus is applied in the shape of a small glass of brandy or liqueur; and during dessert a quantity of wine is sipped, so that the effect of the sipping already mentioned upon the circulation and nervous system are combined with the action of the alcohol and ethers contained in the wine.

Provided that all those parts of a meal have been taken in moderation—and when we speak of moderation, we must always remember that this is a relative term: what is moderation for a man of strong digestion is excess for a man of weak digestion—provided, then, that moderation has been exercised, no harm will result even from a heavy meal. But if the food have been excessive in quantity, or injurious in quality, and more especially if alcoholic stimulants have been taken in excess, the stomach will suffer, and, next day, the symptoms of gastric indigestion will probably appear. The most marked of these are loaded tongue, loss of appetite, tendency to nausea, and, perhaps, even vomiting. The condition of the stomach, corresponding to these symptoms, was ascertained by Dr. Beaumont in the case of Alexis St. Martin. On looking into the interior of St. Martin's stomach, during the occurrence of such symptoms as these, Dr. Beaumont found "that several red spots and patches abraded off the mucous coat, tender and irritable, appeared over the inner surface." In such congested and irritable conditions of the stomach, the gastric juice secreted appears to have an alkaline, rather than an acid, reaction, and consequently to have comparatively little or no digestive power. The food will, therefore, pass from the stomach, not in the form of a fine emulsion, like chyme, but with undigested lumps in it, and these, irritating the intestine, will be not unlikely to produce diarrhoea; moreover, the intestine itself may also suffer by extension of the inflammatory condition, from the stomach along the mucous membrane. Then we notice, in addition to the sickness and nausea, those symptoms to which the term of biliousness is applied. The person is dull, heavy, and languid, disinclined to exertion, mental or bodily, irritable, or peevish, the complexion is muddy, and the conjunctiva is slightly yellowish, and perhaps there is more or less severe headache. All of these point to disturbance of the functions of the liver; but the explanation of the different factors of biliousness must be reserved for the succeeding lecture.

NOTES FROM A CLINICAL LECTURE ON SOME OF THE DIAGNOSTIC DIFFERENCES BETWEEN BRONCHITIS AND HEART-DISEASE.

Delivered at Guy's Hospital.

By SAMUEL WILKS, M.D., F.R.C.P., F.R.S.,
Physician to the Hospital.

ALTHOUGH the clinical features of bronchitis and heart-disease are sufficiently distinctive to be at once recognised by the experienced medical man, apart from a physical examination of the chest, and although the *post mortem* appearances in the two diseases are also markedly different, yet it is not at once apparent why, when both show congestion of the lungs, as the main symptom or immediate cause of death, they should present such distinctive peculiarities. It is important not only to recognise these differences, but to set clearly before ourselves their causes; since, in complicated cases, this will lead to a correct diagnosis, and suggest the appropriate treatment. In a simple case of severe bronchitis, the patient is seen sitting up in bed, and breathing with difficulty; that is, he is using all the muscular effort he can to draw air into the chest, having, indeed, true dyspnoea. At the same time his face is blue, and his extremities livid. The chest is resonant on percussion, the abdomen is not enlarged, and there is no dropsy. In the heart case, notably when the mitral valve is diseased, the patient has not dyspnoea, but apnoea; he can easily fill his chest with air, but, owing to the impeded and irregular circulation, he experiences the distress known as cardiac apnoea or breathlessness. His skin may be pale or yellow at the upper part of the body; the chest may be dull at its lower part, especially on the right side; the abdomen may be full, the liver

enlarged; there may be dropsy of the legs, and some albumen in the urine. In the first case, in spite of the lividity of the skin, the congestion, as seen by its effects on the organs, is not nearly so great as in the second, or cardiac case. I take the case of mitral disease, for in aortic, when the blood is thrown back on the heart, the body is pale and impoverished, and it is not until the mitral valve gives way that the congestive conditions become apparent.

Let us see why these differences exist. In the case of bronchitis, the blood is impeded in the pulmonary artery, as is evidenced by the hypertrophy of the right ventricle, and, subsequently, an engorgement takes place in the general venous system. The forces which urge the blood through the lung are in part mechanical and in part chemical. If the air be prevented from entering the trachea from any obstruction, the blood is hindered in its passage through the alveoli, showing that the chemical process of aëration is necessary for the natural flow of the blood. In cases of strangulation, therefore, the right side of the heart is distended, and the whole venous system gorged. If the obstruction be slower or more partial, as in ordinary diseases of the air-passages, the right ventricle, after a time, forces the imperfectly aërated blood through the lungs; and, there being nothing to impede its flow onward in the pulmonary vein or left ventricle, it takes its course through the system. In this way, the pulmonary circulation is freed, and the lividity of the countenance in bronchitis is therefore not so much owing to venous stasis, as to the presence of dark blood circulating in the arteries. This is the only explanation which I can see to account for the slight engorgement of the various organs in bronchial affections. Take, now, the case of mitral disease; the blood is thrown back on the pulmonary veins, and this arrests the flow coming from the right side of the heart through the pulmonary artery; consequently, the whole of the capillary system of the lungs is gorged on both sides of the termination of the bronchi. You will see that there is no longer a question of the possibility of non-aërated blood passing the alveoli of the lung, since there is a positive mechanical hindrance to the passage of any fluid. The congestion of the lung in the two cases is, therefore, of a very different kind; in the bronchitis, it is on one side of the alveoli only; in the heart-case, it is on both sides; in the former, it is in the pulmonary artery; in the latter, in both pulmonary vein and artery commencing in the vein; consequently, the effects are very different on the several organs, and on the body at large.

In the case of bronchitis, although the patient is livid, the congestion does not attain the intensity it does in that of the heart. Here the blood may actually stagnate in the vessels, producing a consolidation of the lung, or may burst through the tissues, so as to constitute a pulmonary apoplexy. This is known during life by hæmoptysis, and the dulness and absence of breath-sounds on percussion and auscultation. In the same way, and for the same reason, the liver becomes altered, as it rarely is in bronchitis, until the congestion produces great enlargement and the condition known as nutmeg-liver; the kidneys, also, from like engorgement, may show albumen in the urine, and the legs become dropsical. After death, the effects of the engorgement are seen in the indurated lung, spleen, enlarged kidney, and nutmeg-liver. These altered states of organs are so well marked, that their appearance alone would denote death from heart-disease. I have frequently been asked why the same conditions do not obtain in bronchitis. I have now endeavoured to give the explanation.

I have brought the subject especially before you in connection with the numerous cases we have in the hospital, on account of the important practical consequences which result from a knowledge of it. Many cases are not so simple as I have described. A patient, for example, may be found sitting up in bed, breathing with difficulty, and with so much rattling in the chest as to preclude the possibility of rightly gauging the state of the heart. If the case be one of primary bronchitis, this is the disease to treat; if the heart be at fault, that may be the organ to administer to, and the secretion in the tubes be allowed to go on as a salutary process of relief. Suppose, in such a case, the liver be found enlarged, this fact would point to the heart as being the principal cause of the symptoms, and you would prescribe accordingly. Or we might, as we often do, meet with a much more complex case, where, besides the symptoms just named, the urine is albuminous, and the patient dropsical. It is much more easy to call such a case one of renal dropsy, as I have often heard done, than to make out accurately the true causation of the different morbid processes. If, however, on careful examination, we find the liver enlarged and the lung gorged, it is much more likely to be one of heart-disease, and the albuminous urine a secondary affection. Let the case be treated on this supposition, and we may often see the dropsy disappear, the urine become healthy, the liver decrease, the engorgement of lung pass off, and the patient resume his usual

condition—one of chronically impaired heart. Such instances are far from common; for I constantly see cases regarded as primary bronchitis, others as primary liver-disease owing to its enlargement, others as Bright's disease owing to the presence of albumen in the urine, and yet all these conditions are due to congestions arising from heart-disease. This has been overlooked, owing to the absence of *bruits*, or their obscurity by pulmonary sounds. It is, therefore, most important to take note of other facts and considerations on which to found a diagnosis.

I could point to numerous cases where digitalis and other appropriate remedies have been given to quiet and strengthen the central organ of the circulation, and all the other ailments have departed. I cannot, therefore, too much impress upon you the value of a diagnosis in these cases; and consider well all the points to which I have drawn your attention, for upon your due appreciation of them the life of your patient may depend. I have necessarily taken typical cases to dwell upon, and have drawn from a large general experience; at the same time, I should say that there are exceptional cases, which would require further explanation, such as the rarer instances of bronchitis associated with enlargement of the liver and dropsy.

DEATH FROM PISTOL-SHOT WOUNDS: SUICIDE OR HOMICIDE?

By ANTHONY A. BOWLBY, F.R.C.S.,

Surgical Registrar and Demonstrator of Surgical Morbid Anatomy at St. Bartholomew's Hospital.

THE case known as "the Uxbridge tragedy" is one presenting many points of medico-legal importance, the question to decide being whether certain wounds found on a dead body had been suicidally or homicidally inflicted. The result of the trial was the conviction of the prisoner for the murder of her husband.

The account which follows has been written on my own responsibility, and does not in any way implicate Mr. Parrott, the other medical witness. Nevertheless, I may say that, on almost all the main points, we were entirely agreed.

The circumstances of the case are briefly as follows. The deceased, James Gibbons, aged 65, a perfectly healthy and prosperous man, lived with his wife at Hayes, Middlesex. He had been married thirty-seven years, but had no children. He had adopted, or at any rate undertaken the care and education of, a little girl distantly related to him, and had had disagreements with his wife on this account. On November 15th, 1884, he went into the country to see his adopted child; in the evening, he returned to Hayes, and walked home from the station with the station-master—a personal friend—who testified that he left him close to his own door somewhere about 10 P.M. He was seen to enter his house by his own servant-girl, but was not again seen alive. His wife and he were the only persons who slept at his home. Shortly before midnight, the next-door neighbour was aroused by Mrs. Gibbons, who was dressed in her nightgown alone, and who said that her husband had committed suicide. The neighbour returned to the house with Mrs. Gibbons, and found the deceased lying dead on his face upon the floor of the bedroom in a pool of blood. Close to his side lay a revolver. Mr. Parrott, of Hayes, was at once sent for, and in a short time arrived at the house with Mr. Hathaway, his assistant. They found the deceased lying on his face on the floor, with his left arm stretched forwards towards the door, the right arm doubled beneath his body, and his feet towards the bed. On the side of the bed next which he lay was a depression, as though caused by some one sitting down; this depression was about half way down the bed, and close to it the sheet was sprinkled with a few spots of blood; anyone sitting on the place indicated would have his right hand towards the pillow. There were no marks of a struggle having taken place; but close to the door the wall was marked with blood-spots, so that a very large amount of hæmorrhage had taken place, the clothes of the deceased were saturated and smeared with blood; he was partly undressed, and had on a shirt, jersey, and drawers.

Mr. Parrott hastily turned the deceased on to his back, and found the three wounds to be presently described; life was extinct, but the body was quite warm. Turning to the wife, Mr. Parrott naturally asked, "How has this happened?" She replied that they had had a few words about the little girl who used to live with them; that the deceased had then taken the pistol from under the pillow; and, exclaiming that he could stand it no longer, had waved the weapon round his head, and fired off four or five shots in rapid succession. Asked by Mr. Parrott whether she had not tried to prevent her husband from killing himself, she said that she had thrown her arms