

which known defects or perverted action of nerves or central nerve organs are attended by abnormal conditions of bone.

Illustrations are derived from various sources showing the influence exerted upon bony tissue by nerve and nervous centres: and of interference with its condition arising from modifications in nerve action, in some cases resulting in hypertrophy, and in others producing special conditions of the bone-tissue owing to changes of structure following changes in its vascularity, etc. Clinical experience points to the conclusion that any interference with the supply of blood to bone-tissue affects its nutrition; and the influence of nerves in regulating the blood supply is too well known to require the production here of the proof of it.

The *Report of Medical Cases admitted during the years 1870-71, and the Report of Maternity Department from 1854 to 1871, inclusive; with Observations on Revaccination during the Smallpox Epidemic of 1871*, conclude the volume, which, so far as the papers we have just noticed are concerned, we regret to say, fails to fully represent the rich stores of clinical experience which the above mentioned reports tell us annually accumulate within the medical wards of St. George's Hospital.

I. M. H.

ART. XXVI.—*Experimental Researches on the Causes and Nature of Catarrhus Æstivus* (Hay Fever or Hay Asthma). By CHARLES H. BLACKLEY, M.R.C.S. Eng. 8vo. pp. ix., 202. London: Ballière, Tindall & Cox, 1873.

Numerous treatises on this disease have appeared in England and on the Continent since it was first described by Dr. Bostock in 1819. More recently, thirty of these have been collected, and with additional observations combined in an essay by Dr. Phœbus, of Giessen. It would seem, therefore, that the literature of this singular affection is sufficiently full. Mr. Blackley's book, however, differs from its predecessors; his object is to give a record of his investigations into the causes and nature of the disease, besides which he gives us speculations growing out of his view of the facts obtained. The causes, as held by various writers, are enumerated and examined. Dr. Bostock believed that in his own case, the disease had no connection with hay, but was dependent upon the effects of heat and sunshine, especially after bodily exercise. Dr. Gordon attributed it to the aroma of grass flowers, especially to the *Anthoxanthum odoratum*, a sweet-scented vernal grass. Dr. Elliotson sides with Dr. Bostock, while others, with Dr. Phœbus, taking a wider view of the subject, attribute it to a peculiar idiosyncrasy combined with certain unknown causes acting during the heats of summer, and that with this predisposing state of things accesses or exacerbations may be produced by a variety of exciting causes, such as the odour of certain flowers or their pollen, smoke, dust, either vegetable, mineral, or that having certain chemical qualities.

Mr. Blackley starts with the idea that, although there may be other agents than pollen which may produce symptoms not unlike those of hay fever, they have not, as yet, been found; he therefore proposes to confine his attention to the phenomena of the disorder brought on by pollen. Nevertheless, he examines a few substances which have been suspected as causes; among them benzoic acid, coumarin, or the odoriferous principle found in some of the grasses and other plants and easily obtained from the tonka bean; odours of various kinds; ozone; dust, and the influence of light and heat.

The inhalation of the vapour of benzoic acid produced no effect resembling hay fever, nor did breathing the air of a room filled with the odour of coumarin from the tonka bean. The odour of plants or flowers or the vapour of their essential oils all produce "head symptoms," of what kind is not stated, but no hay fever symptoms. The inhalation of the spores of *Penicillium glaucum*, a microscopic fungus found in straw, "produced hoarseness going on to complete aphonia," lasting "for a couple of days, and ending in a sharpish attack of bronchial catarrh, which almost unfitted me for duty for a day or two." These spores, he thinks, come near to the exciting cause of hay fever, but he believes them capable of producing symptoms of a much more acute and dangerous character; the result of his experiment, he says, agreeing to some extent with the observations of Dr. Salisbury. But Dr. Salisbury alleges that he produced with these same spores measles with its distinctive eruption in those who had not previously suffered from measles (a result which has not been obtained by other and competent observers), a disease which can hardly be coufounded by a superficial observer with hay fever.

The experiments to determine the influence that pollen may have when directly applied to the mucous membrane are much the most interesting parts of the book. Others had already inhaled pollen and noted its effects, and the belief has long existed that it is a cause of exacerbations during the usual hay fever season. Mr. Blackley has pursued the subject with perseverance. His experiments are numerous, not only with the grasses, a prolific source of pollen, but also with that of thirty-five other natural orders of plants. The pollen of the pines and spruces, which is given off in such quantities in the so-called sulphur shower, and which from its peculiar shape is easily distinguished from that of grasses, is not among the number. The dates of the experiments are not given, but they are stated to have been made at all times of the year, generally upon himself only, but occasionally upon others. In some cases the dried pollen was used after it had been kept some months, but for the most part this was used during the period in which the plants indigenous to the country were in flower, whilst the pollen was fresh. The grasses were first tried; the pollen applied to the nostrils produced itching of the part, sneezing, and a free discharge of serum followed by swelling of the mucous membrane impeding the passage of air. In some instances these effects had not passed away in twenty-four hours. The effects of pollen from wheat, oats, and barley were similar. Applied to the eyes it produced in some cases effects like dust, in others irritation of the conjunctiva, with chemosis lasting some hours. The tonsils and fauces were similarly affected. These effects, which are assumed to constitute hay fever, varied in severity; in some cases they were so mild that it was necessary to repeat the experiments several times and under varying circumstances, in order to be certain that they were present. But, says Mr. Blackley, "whatever may be the nature of the influences which modify the activity or power of pollen in producing hay fever, this power was always present in a greater or lesser degree in all the plants experimented with." The causes of these effects are partly mechanical and partly physiological; of the former some are believed to be due to the changes produced in pollen by the moisture of the part upon which it falls, and the consequent discharge of the contained granular matter on the bursting of the cases. This granular matter Mr. Blackley "found by experiment may, by dialysis, be made to pass through membranes which are thicker than those which line the air vesicles and bronchial tubes."

The pollen of a variety of the Darnel (now, by the exhaustive experiments of Mr. Wilson, freed from the charge of being the only poisonous grass), when applied to the abraded skin, produced a copious serous effusion into the sur-

rounding cellular membrane, similar to that produced by the Buttercup, *Thapsia*, and some other plants upon skin not deprived of cuticle.

Observations were made to determine the quantity of pollen in the atmosphere at various times for comparison with the intensity of hay fever symptoms at the same time. The pollen was collected in the usual manner on glass slides of a certain area, in this case a square centimetre, smeared with an adhesive substance; the number of grains caught in 24 hours was counted under a microscope. Two sets of experiments were tried; the first in a hay field while the grass was in flower, and the second during the following season, in a quadrangle, in the outskirts of a city, with no grass plots within a third of a mile. The first series of observations was commenced early in April, and ended August first. During the month of April very little pollen was found; a table of curves is given of the number of grains on each slide exposed from May 28th to August 28th. This number varies greatly within short periods, especially under the influence of rain or wind, the first diminishing and the last increasing it. May 19th, there were 5 grains; May 28th, 880; and again six days later but 5. The relation of quantity to intensity of symptoms is obviously difficult to determine, the observations were made upon the author alone. The record of symptoms is given but for five days, while that of the quantity of pollen is given on more than forty days. "In all the experiments I have tried, one fact stands prominently out, namely, that a certain amount of pollen may be present in the air without producing in me any appreciable symptoms." (§ 218.) "The day on which the highest number of grains was found the symptoms were in some respects not so severe as might have been expected." This is attributed to the closure of the nostrils on that day, under the influences of the disease. Notwithstanding these discrepancies, it is stated that the highest point in the table of curves corresponded tolerably well with the periods of the greatest intensity of the disease, and the author believes "the facts show conclusively that hay fever in my case is due to the presence of pollen in the air." It would manifestly have given the reader a much better means of judging of the relation of intensity of symptoms to quantity of pollen, had the records of the two been more nearly equal. In the still air of a room the pollen thrown off from a plant fell to the ground and did not produce any symptoms which could fairly be attributable to it.

The second set of experiments, between May 28th and August 2d, of the following season, were made at a distance from any grass land, and gave, as might be expected, a smaller number of grains; the highest being 105 in 24 hours, and the lowest 5; neither were the changes so sudden as in the previous observations in the hay field. As to the symptoms, we have the general statement that "they corresponded very closely with these changes; on one day, May 23d, that on which the highest number was collected, the record was that of the worst day since the attack commenced. A number of experiments two years later, half a mile nearer the open country, gave results practically midway between the two others. The symptoms are said in general to correspond with the quantity of pollen, but the details are not given. The average quantity of pollen during the ten days in which it was greatest in 1866, in the country, was 10 times that of 1867 in the city, and this corresponds with the intensity of the suffering in these two situations.

By means of kites pollen was collected at altitudes ranging from 300 to 1500 feet. The result showed the surprising fact that more than nineteen times as much pollen was found at high elevations as at the surface of the ground; or, to speak with the exactness of our author, these quantities were as 24 to 472.33. In one, the only successful experiment, made at an altitude of 1000 feet, after the wind had been blowing more or less from the sea for twelve or

fifteen hours, and with no land to the windward for 400 miles, the glass showed 80 pollen grains while that on the seashore showed no pollen "or any solid matter whatever." "This experiment has shown," says Mr. Blackley, "that living germs may be carried, by the upper atmospheric currents, long distances across the sea, while the lower strata of air may be perfectly free," producing, as he thinks, a zone of atmosphere commencing some distance above the earth which contains a much larger number of germs and spores than is found in the lower portion of the atmosphere. That air next the sea, against which it is driven, should give up its solid matter seems probable, but the second inference seems to us hazardous until we shall have more than a single experiment and know more of the upper currents.

The influence of light and heat in producing the disease does not seem to be considerable, judging from the great heats borne in India without symptoms of it, by persons who suffered from hay fever in England; but the evidence is sufficient to show with great probability that hot, dry, and dusty weather is that in which there is most suffering, and that heat and light bring on exacerbations.

A chapter on the history and nature of hay fever follows. Mr. Blackley thinks it was unknown in early times, and that it is now on the increase in consequence of the greater intellectual activity of the more numerous class, and the greater nervous susceptibility caused by indoor occupations, and that from these causes and others it will continue to increase. The symptoms are given with the author's explanation of them. The dyspnoea, not only in hay fever but in all cases of asthma, is attributed to infiltration with serum of the submucous cellular tissue of the air-tubes, and never to spasm of the muscular fibres, as has been so well explained by Dr. Salter. The closing of the nostrils is caused by a similar infiltration, the alternate opening and closing of these passages to gravitation of this fluid from nostril to nostril, to which the septum is not supposed to offer any obstacle, and not to changes, under the influence of the vaso-motor nerves, in the rich venous plexus underlying the mucous membrane of the nose, changes which are so easily observed in the conjunctiva. As to treatment Mr. Blackley expresses himself as more than doubtful as to any course now known which can produce a cure, but he does not leave his patient without hope. "I am," he says, "at the present time engaged in experiments on the action of various agents, and hope to be successful in my search for an effectual remedy for the disorder, though the time," he subsequently adds, "may be somewhat distant."

Mr. Blackley deserves great credit for his patient investigations into the effects of pollen applied to the nostrils or inhaled in the air-tubes, and also the determination of the quantity in the air during the hay-fever season; but that no other agent than pollen is known to produce similar symptoms, and that the disease should therefore be called "pollen catarrh," many would not admit. The following are some of the objections to his theory: Of the thirty-five different natural orders, besides grasses, the pollen of which was examined, nine-tenths have flowers which, either by their glutinous properties, the weight of the pollen grains, or the mechanical obstacles presented, effectually prevent the dissemination of their pollen in the air, and are, therefore, fertilized by insects. Take, for instance, the bean flower, which patient 5, in Mr. Blackley's book, says "is as trying as a hayfield." It is so completely boxed up that no pollen can escape; it is only obtained by insects and by them transported. Then again of the rose, which has given the name to the disease in some parts of England, and of which patient 2 says: "If I gather them, a very severe attack immediately supervenes, more than from any other flower." It is well

known that the double varieties, those usually cultivated and, therefore, most likely to be gathered, are neutral, having neither stamens nor anthers, and consequently no pollen. It is a singular fact, pointed out by Dr. Wyman in his essay on *Autumnal Catarrh* (New York, 1872), that persons in New England who have "rose cold" or hay fever there in June, have escaped a similar affection at the same season of the year in England, notwithstanding that the grasses which are said, by our author, to furnish 95 per cent. of the effective pollen found in the air, according to Dr. Gray, our most eminent American botanist, are botanically identical in the two countries. Again, many of the flowers and other agents, which produce the symptoms of hay fever at the critical season of the year, are apparently powerless at other seasons, although, while in full bloom in conservatories, they are visited by persons who had previously suffered. The evidence in favour of other exciting causes than pollen does not seem to us quite fairly weighed. The dust of the highway, so annoying to hay-fever patients, Mr. Blackley assures us is only thus annoying because of the pollen which is mixed with it, although he also assures us that the effects of pollen are partly mechanical, and that a certain amount of pollen may exist in the air without appreciable symptoms. So again, the dust and smoke in a railway carriage, which almost invariably at the proper season bring on a paroxysm even when there are no hay-fields near, are, he thinks, wrongfully suspected; the true cause is the pollen brought in the carriage from regions where grass is in flower: "That this is not a matter of speculation," says Mr. Blackley, "my own experience abundantly proves." Until he shall have given us the method by which he distinguishes the effect of the dust from that of the pollen, he must permit us to deem his explanation farfetched. Notwithstanding the evidence of the controlling influence of theory, and a disposition to speculate and generalize on too narrow a basis of facts, the reader will find in this book much that is new and instructive.

M. W.

ART. XXVII.—*Die Diagnose der Eierstocks Tumoren, besonders der Cystomei.* VON OTTO SPIEGELBERG. Sammlung Klinischer Vorträge, No. 55.
On the Diagnosis of Ovarian Tumours. A clinical lecture. By OTTO SPIEGELBERG, March, 1873.

THIS lecture belongs to a most excellent series now in course of publication in Germany; a course of clinical lectures upon practical subjects, by eminent men, in every branch of the profession, chosen from every part of the country. The one before us bears the name of a renowned obstetrician and gynecologist, and is of especial interest to us at this time because following closely upon the publication, in England and this country, of important works upon ovarian disease and ovariectomy which have been reviewed in our pages, and also because showing that Germany, late as she has been in taking up this important advance in our art, has already close and thorough students of it.

The lecture opens with the relation of two cases of pelvic tumour. In regard to the nature of one there was a difference of opinion, which neither the chemical nor microscopical characteristics of a specimen of its contents, withdrawn by puncture, could reconcile; but a diagnosis of ovarian cyst was finally made by resorting to Simon's manual examination *per rectum*, and confirmed by the operation of ovariectomy. In the other, all the usual measures having been exhausted, an exploratory incision was resorted to, and the feasi-