

THE BRITISH ASSOCIATION MEETING
IN MANCHESTER.

THE meeting of the British Association in Manchester will provide a busy week for those who choose to avail themselves of the opportunities provided for scientific discussion and visits to places of special interest. As previously announced, the long-distance excursions that old members are accustomed to on the afternoon of the Saturday and on the last Wednesday of the meeting will not be found on the programme, but the executive committee has arranged for a large number of visits to the principal municipal undertakings, works, and warehouses, which should prove to be of exceptional interest. Most of these visits will be made in the afternoon, and will not therefore interfere with the important work of the sections. It is difficult to select from the list any one that may be regarded as especially noteworthy because there is so much variety offered by the great industrial community of which Manchester is the centre, and an appeal to many different interests will be made. But as the Manchester Ship Canal is sometimes regarded as one of the wonders of the world, it is probable that the visit to the Manchester docks and canal will be one of the most attractive features. This visit will take place on the afternoon of Friday, September 10, and the party will be limited to one hundred. The Ship Canal Company has kindly provided a special steamer for the visitors, and arrangements will be made for the inspection of all the principal engineering features of this great undertaking.

The important works of the Manchester and of the Salford electricity departments will be shown to small parties in the course of the three working days of the meeting, and opportunities will be afforded for members and associates to visit the corporation gas works, water works, and sewage disposal works. Of the visits to the works of the principal Manchester industries that to the Pilkington Tile and Pottery Co. at Clifton Junction will probably be one of the most interesting; but the most ambitious so far as distance is concerned is the proposed visit to the soap works of Messrs. Lever Bros. at Port Sunlight on Thursday, September 9.

Other visits that may be specially referred to are to the works of the cotton spinners, of several large electrical machinery manufacturing companies, of the great Manchester warehouses, of the hat manufacturers of Stockport, of the calico-printers, of the packing warehouses, etc.

In connection with the special work of the sections several excursions on a small scale have been arranged. Thus, Section C (Geology) will adjourn in the afternoons for visits to places of geological interest in the immediate neighbourhood for field demonstrations of Dr. Hickling's paper on the geology of Manchester, and there will be a longer excursion arranged for the Saturday afternoon. Section D (Zoology) will adjourn to the zoological laboratories on Thursday afternoon for exhibits and demonstrations of original work that

has been conducted or is in progress in the university. Section E (Geography) proposes an afternoon excursion into Derbyshire. Section H (Anthropology) proposes a visit to the Roman camp at Ribchester, on which occasion Sir F. F. Adam will preside. For Section K (Botany) a series of interesting demonstrations in the botanical laboratories of the university are being arranged; and Section L (Educational Science) has arranged for two visits to educational institutions, one, on Thursday afternoon, to the Kindergarten Training College in Whalley Range, when Sir William Mather will entertain the party to tea, and the other to the school for feeble-minded children at Sandlebridge.

On Wednesday evening the Lord Mayor of Manchester will hold a reception in the Manchester School of Technology from 8 to 8.30, after which members and associates will be able to inspect the workrooms, machinery, and appliances of the institution.

Every effort is being made by the local executive committee to ensure the success of the meeting, and although it cannot be expected that the numbers will be as large as they would have been in normal times, there is every prospect of a good attendance of men of science and of important work being done.

ART AND CRAFT IN FISHING.¹

IN recent years the contemplative man seems to have changed his nature, to judge from some of the books which he gives to the world. Time was when he was content just to go fishing, with the simple object of catching fish. But now his demeanour is more that of a man who is setting out on a serious piece of scientific work, and, though he has not quite lost what Francis Francis used to call "a kind of prejudice for a brace of fish in the creel," he is mighty particular as to how that brace of fish got there. Should he, so to say, have been overtaken in inadvertency and have decoyed one of them in a manner not permitted to the elect, his conscience will know many pangs, and likely his tongue will begin the story with apology and end with explanation. There is no longer pride in a fish just as a fish. The modern achievement is a fish caught on a female olive. The same fish caught on an Alexandra would be like a shot fox; for the angler has become a much improved and superior person, and (may we confess it?) at times a little difficult to live with.

His literature, however, has certainly gained in interest, because it can no longer be said, as it used to be said, that there is nothing new to be written about fishing. The mere discovery of the female olive brought a whole new world swimming into one's ken. And since then there have been

¹ (1) "Fly-Fishing: Some New Arts and Mysteries." By J. C. Mottram. Pp. xii+472. (London: Field and Queen (Horace Cox), Ltd., n.d.) Price 5s. net.

(2) "The Complete Science of Fly Fishing and Spinning." By Fred. G. Shaw. Pp. xiii+432. (Published by the Author, Neville Court, Abbey Road, N.W., 1914.) Price 21s.

other developments to give the angler a still more earnest countenance, such as the discovery that a fish's life-history is written on its scales, or that you may capture a chalk-stream trout with a wet fly, not as of old empirically, but with due regard to all the laws of science, and in a manner to command the admiration of the impartial.

(1) Dr. Mottram's little book is an excellent sample of the newer fishing writing, in which various old problems are approached in the spirit of scientific inquiry, solutions being offered in a way that inspires confidence. The author is evidently a good and very zealous angler, he has had a scientific training, and he does both experiment-

colour sense of fish, citing a very interesting and careful experiment, which showed a roach to have a sense of colour; of optical problems, which are about the latest of the fly-fisher's studies, adding something to our ideas; of waterside fly-tying, the treatment of mud, fish watching, difficult casts, and so on. He gives several chapters on his own sport, especially in New Zealand, where he seems to have been about the first angler to study natural flies and imitate them.

This brings us to what is certainly the most important part of Dr. Mottram's book, his theory of imitation of flies, which is unfolded in a chapter entitled "Flies of the Future." He breaks boldly away from the exact imitation school with its tradition of stiff opaque wings for floating duns, and substitutes what might be called a policy of impressionism, in which he lays special stress on the shape of a fly's body and on methods of obtaining the transparent effect which is so defiant of imitation in the natural dun. The idea that "one of the best ways of indicating transparency is to omit the transparent parts altogether," is extremely ingenious, and it should work out well in practice. Ingenuity is, indeed, a marked feature of the whole book, which is a valuable addition to the fishing library.

(2) Mr. Shaw's book is a more ambitious volume, as its rather formidable title would indicate. The "complete science"—it is a big aim. In one respect, however, Mr. Shaw seems to us to justify his selection of the title. There is probably no angler of the day who has so carefully studied what may be called the dynamics of fishing, the various ways of getting a fly or spinning bait to a given point in the most effective manner. Mr. Shaw's chapters on casting show a remarkable grasp of principles, the exposition of which will teach even the oldest hands a lot. Most anglers—even very good—cast their fly or bait without any very clear notion how they get the results they aim at. They know these to be fairly satisfactory and do not trouble further. Mr. Shaw shows exactly what happens when you do certain things with your rod, and proves conclusively why it must happen. Also he suggests many other things which you may do, things of which you have very likely never thought, and which are bound to be extremely useful to you. Wind casts, Wye casts, steeple casts, Galway casts, loop, switch, and Spey casts—there are many devices by which you can get the better of difficulties. With excellent photographs and diagrams Mr. Shaw expounds them all, and if it is possible for a man to learn technique from the printed page—and it certainly is possible for some—he should gain a great deal from this book.

In the other portion of the volume he deals partly with the practice of fishing and partly with various matters, more or less scientific, in which the angler takes an interest. He is obviously a good fisherman as well as a good caster (the two are not necessarily complements of each other), and he is full of useful hints and contrivances such as an expert picks up in many years of fishing.

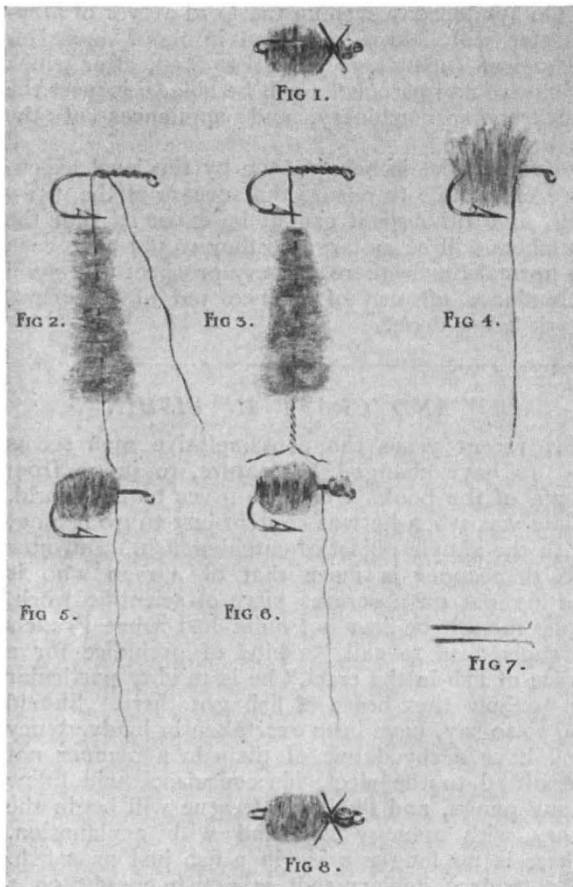


FIG. 1.—The tying of a new fancy fly. From "Fly-Fishing: Some New Arts and Mysteries," by J. C. Mottram.

ing and thinking for himself. He seems singularly free from the common angling tendency to take other people's experience for ascertained fact, which gives his conclusions, even in matters on which others have written with authority, a value of their own. He treats of a great diversity of subjects, of water weeds and their merits as food-producers (here, though generally sound and useful, he is too sweeping; for instance, he condemns *Elodra canadensis* out of hand, which seems strange; it is horribly free in its growth, but it is far from being a bad weed otherwise); of the

For instance: "Use the two tops of your fly-rod alternately," he advises, and the advice is very obviously sound. But some of us, alas! have never thought of it before, regarding the second top as merely a spare one for emergencies. And yet we have talked to each other with conviction about split cane getting "tired" after continuous use for some time! This is a small matter, but there are plenty of similar casual hints which will come forcibly home to a good many of us who have long passed out of our novitiate.

In the other chapters Mr. Shaw deals with the fisherman's entomology, now a fairly well-ploughed field, with pisciculture and the natural history of trout, of which much the same may be said, now that there is a trout farm in almost every likely valley of springs, with the senses of trout, particular attention being paid to their vision, and especially to how far they can see behind them, a point which so far as we remember

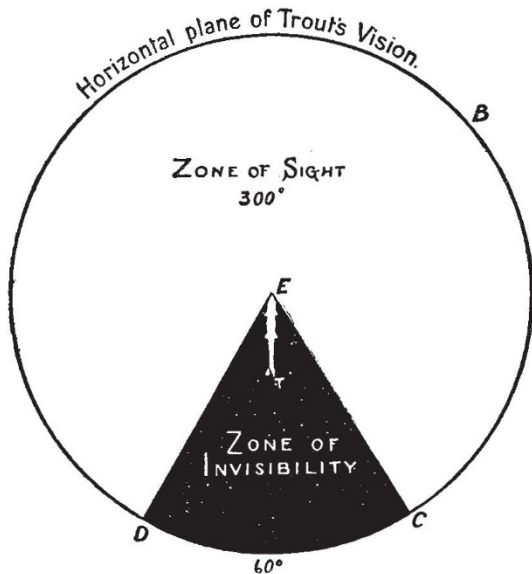


FIG. 2.—From "The Complete Science of Fly Fishing and Spinning," by F. G. Shaw.

no other writer has tackled—but it is one of importance, as every man who has stalked a fish on a "shy" day will allow.

There are also chapters on salmon and salmon scales. In the last Mr. Shaw devotes a great many words to labouring what seems to us an odd objection to the usual interpretation of what is called the spawning mark, which is, of course, that a fish has spawned in some previous year. Mr. Shaw apparently wants evidence of the act itself before he will admit that salmon ever spawn more than once. The spawning mark, in his view, would, we gather, be evidence of a visit to fresh water for the purpose of spawning, but not necessarily that the purpose was satisfactorily accomplished, the ova being duly fertilised and safely stored in the redds. So far nobody would quarrel with him, we expect, but, unless we wrong him, he seems to find in the spawning mark evidence that the spawning purpose has *not* been

carried out, the eggs being voided in vain or re-absorbed. A fish so cheated "will return again and again until it has satisfactorily achieved its life's purpose." We fear we cannot produce scales from a fish marked in the act of spawning and recaptured later, to convince Mr. Shaw. Perhaps he can produce scales from the necessary percentage of unfortunate fish which have been found voiding their ova in vain to convince us? At present our inclination is towards the current view of the spawning mark and its significance. There are other points in the book in which our view would not coincide with Mr. Shaw's (incidentally we have found some scarcely excusable misprints), but on the whole we must own to having studied him not without pleasure and profit.

THE TESTING OF CHRONOMETERS.¹

IN his recently issued report on the testing of chronometers at Geneva, M. Raoul Gautier, who has been in charge of the department for twenty-five years, takes the opportunity of reviewing briefly the successive alterations and improvements that have been introduced in the methods of testing, and the happy results that have followed from the maintenance of a high standard. We may take this same opportunity of congratulating the distinguished director of the observatory on the useful work accomplished, and with which the name of Gautier has been so long and so honourably connected.

Nearly a century has passed since Alfred Gautier combined the duties of the director of the observatory with those attached to the Chair of Astronomy. But even before that time Geneva was bidding for the watch trade and fully alive to the advantage that would accrue from an increase in the accuracy of performance. In 1789 prizes were offered by the local Society of Arts for a notable improvement in the rate of pocket watches, but the prize remained unawarded, for the ambitions of the judges were so much in advance of the abilities of the maker that the standard was not attained. In framing more modest requirements, it was stipulated that the daily rate of the watch should not vary more than one minute during a trial of a month in a vertical and horizontal position, and not more than two minutes when worn for the same period. Two watches were submitted, and one was stated to have fulfilled the conditions.

These were humble beginnings, and the disturbed state of Europe during the Napoleonic wars prevented anything like an annual competition, which the local Society of Arts proposed to hold. But progress must have been rapid, for in 1816 the limit of variation of rate was reduced to three seconds in twenty-four hours, whether the watch was at rest or carried in the pocket. For the first time we find a temperature factor mentioned: the watch was to be kept in a constant temperature of 25° Réaumur, and it was not till much later that any serious attempt was made to remove the ill

¹ "Rapport sur le Concours de Réglage de Chronomètres." Par M. le Prof. Raoul Gautier, Directeur de l'Observatoire de Genève.