"No," he said carelessly. "You were on the right track, Lucy. But do you know who Mr. Arden, the detective, reminded me of?"

"No, Charley. Who was he? Any one that I know?"

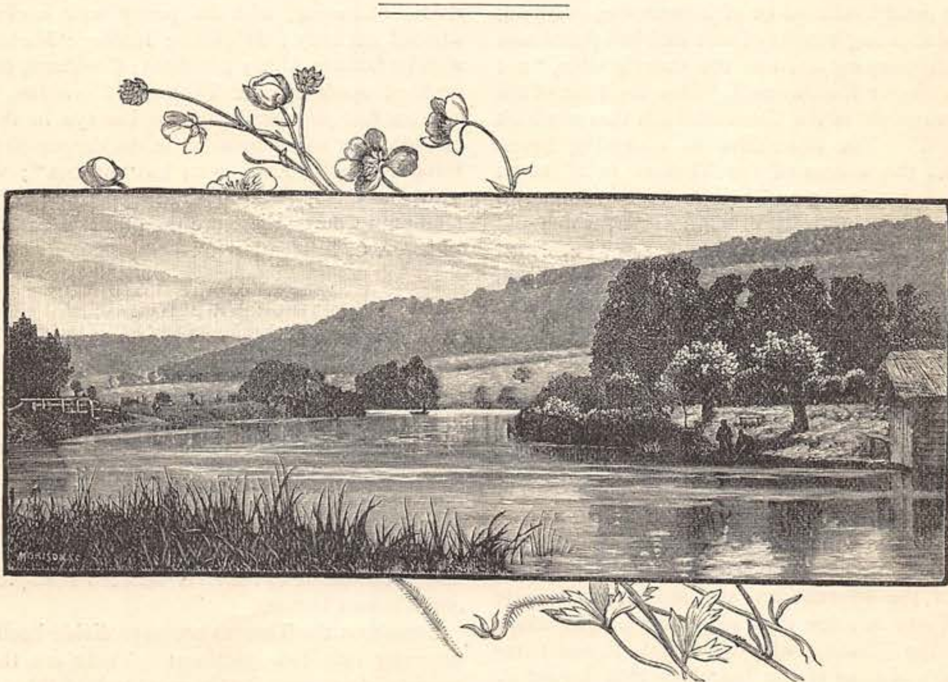
"Well, you *did* know him once. 'Set a thief to catch a thief'—not meaning you, or any disrespect, of course, Lucy. It was that young policeman who came over here about Mr. Alleyne's case. I saw him at Winchester, and I'm afraid——"

"What, Charley? Afraid of—of—us?"

"Yes, *us*," replied my husband; "and that's why he came here for lodgings. He had seen *us* in trouble before. But he has been twice mistaken in you, dear. Men are very foolish."

"That they are, Charley," I said. "So drop the subject, please."

And he did. That was the last time he ever referred to the diamond robbery of which I had been suspected, as told in these chronicles.



"THE ROYAL RIVER."

POPULAR appreciation of the beauties of the Upper Thames has increased immensely within the lifetime of the present generation. Where, a score of years ago, there was one man who gave his summer leisure to the enjoyment of the glories of London's river, there are now a dozen; there is no seclusion for the anchorite below, at any rate, Great Marlow; quiet, leafy nooks are made busy with passing life, or resound with girlish prattle and buoyant laughter; and the Thames, deprived, so far as the portion "above bridge" is concerned, of much of the importance as an artery of commerce which it possessed before railways were introduced, has become the pleasure-river of the toilers of London. How great is the consequent traffic, it is only necessary to spend half an hour at Moulsey Lock on any summer evening to ascertain, whilst it is asserted on credible testimony that on June 14th, 1885, no fewer than 900 pleasure-craft passed through Boulter's Lock at Taplow.

Putting aside those members of the various rowing clubs below Teddington who find their delight in boat-racing somewhere between Putney and Mortlake, it may almost be said that, for the ordinary pleasure-seeker, the Thames begins at, say, Kingston and ends at Oxford. There are few who push their researches beyond the University City; fewer who travel as far afield as the dilapidated lock at Lechdale, the first on the river, who visit Cricklade, between which and Oxford the stream is locally known as the Isis, or who wander on to the source of the river at Thames Head or Seven Springs. For, like many another good thing, the Thames is of doubtful origin. Dr. Campbell, in his "Political Survey of Britain," expresses the opinion that it has a quadruple source, but it is generally conceded that the choice rests between two spots. Messrs. Cassell and Co. have recently published, under the title which appears at the head of this paper, a description of the

Thames from source to sea. It is a magnificent book, worthy of "The Royal River" alike in its letterpress and in its illustrations, and is divided into twelve sections, each portion of the river being described by a writer specially familiar with the district of which he treats.

Mr. W. Senior, so well known to anglers, deals with the part of the river above Oxford; and he, in accord with Mr. James Thorne in his pleasant "Rambles by Rivers," asks us to accept Seven Springs as the source of the Thames. This is a spot some three miles south of Cheltenham — a small, shallow, neglected triangular pond in the midst of a common, overhung with the interlacing boughs of ash and hawthorn, and a sloe-bush creeping down to the water's edge, "not far," as Professor Ramsay says, "from the crest of the oolitic escarpment of the Cotswold Hills that overlook the Severn." The alternative to accepting Seven Springs as the source of the Thames is to adopt Thames Head, a spring on Trewsbury Mead some two or three miles south-west of Cirencester, which old Leland once called "the very head of Isis," but which has been sadly diminished in volume by the Thames and Severn Canal. At any rate, whichever origin we accept, the two streams undoubtedly constitute the Thames after they unite a short distance below the bridge at Cricklade. The feature of the river thence to Oxford is its quietude and utter rurality, and amidst scenes of placid life we pass on to Godstone, and visit there the time-honoured "Trout" Inn for the sake of the striking view of Oxford that can be obtained from its pretty garden.

And here it may be said that a very useful feature in the book already referred to is the frequent mention of the different inns at the various riverside towns. There are few men who have passed much time on the Thames who have not pleasant reminiscences of some of the hostelries that border it. The queerly-named "Beetle and Wedge" opposite Moulsford Ferry, quaint, old-fashioned, comfortable; the "Barley Mow" at Clifton Hampden, oddest and quaintest of inns on the river, and famous for its cider; the "Red Lion" at Henley, and the house of the same name at Halliford; the famous old "Bells of Ouseley," with its two bay windows and its steep flight of steps, a perpetual warning against the possible consequences of quenching thirst "not wisely but too well;" the "Angler's Rest" at Runnymede; the pretty old-fashioned "Swan" at Staines, and the picturesque "Swan" at Thames Ditton—these are some of the houses of entertainment that are familiar to most river-men, and that memory recalls to me as I write these lines.

Life in a house-boat is thoroughly enjoyable when it is intended to make a stay for any length of time in one place; camping-out, whether under a tent on shore or beneath an awning rigged up on the boat herself, is very pleasant in fine weather, though it yields too cramped accommodation to afford much comfort on a wet day, especially if the canvas is anywhere defective; but for the man who desires to move from place to place, and who, at the same time, is perhaps too old to appreciate the delights of "roughing it" for its own sake, there is much solace to be found in a riverside inn.

To row down from Oxford is now a favourite trip. This is not the place to descant upon the charms of the University city, nor—though, in Messrs. Cassell's book, Mr. D. S. MacColl and Mr. J. Penderel-Brodhurst have found plenty to say regarding the Thames between Oxford and Abingdon, and Abingdon and Streatley respectively—is there much, save pretty Iffley Mill, to detain us until we reach the latter place. From here, however, past Pangbourne to Mapledurham, is, perhaps, the most charming stretch on the river. Sonning, with its pretty weir backed by a wooded declivity; Shiplake; Henley; Medmenham, with its famous Abbey; Bisham; Cookham, one of the prettiest spots on the Thames; Clieveden, with its glorious hanging woods, resting the eye in the noontide glare, or softening away in the deepening twilight; Boveney Lock; Eton, with its "Athens"; Windsor, with its Castle; Staines; Shepperton; Halliford; Hampton Court—these are the places to make us say with Mr. C. Austen Leigh:—

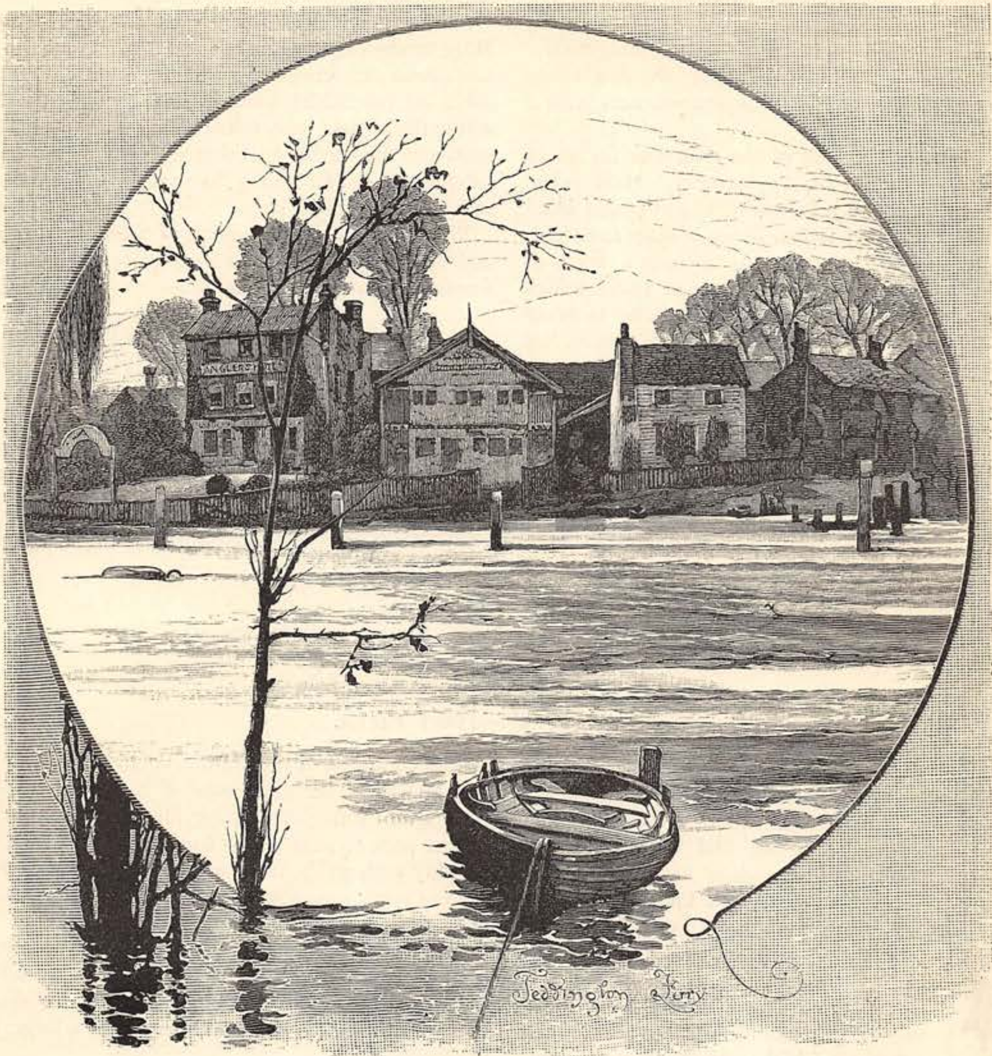
> "The waving tresses of the weeds,
> The water's ripple in the reeds,
> The plunging 'lasher,' cold and bright,
> Making sweet music to the night;
> Old spires and many a lordly grove—
> All these there are, and more to love,
> By Tamise ripe."

Do not let us, either, forget Clifton Hampden, where, away amongst the water-lilies, is a charming spot for house-boats whose owners prefer quiet beauty and restful seclusion to the comparatively fashionable life at such places as Goring, Henley, or Maidenhead, and to the bustle of the river between Hampton Court and Thames Ditton.

Somehow, the Thames seems to divide itself almost naturally into two portions. There are the upper reaches, given over for the most part to those who are upon pleasure bent; there is the river below London Bridge, bringing us face to face with the stern realities of life. There are not a few who will contend that there is no beauty in the lower Thames, and that where

> "Lies London in her dusky pride,
> Deep in dim wreaths of smoke enfurl'd,
> The wonder of the modern world,"

the romance of the river has vanished. Mr. Aaron Watson, however, who is responsible for that portion of "The Royal River" which deals with the Thames from London Bridge to Gravesend, is of a different opinion, and it may be as well to let him speak for himself. "No effective justice," he writes, "has ever yet been done to the lower portion of the Thames. You will find it stated in most books on the subject that the river ceases to be picturesque when it has passed St. Paul's. A French poet calls it 'an infected sea rolling its bleak waters in sinuous détours,' and that is the despondent view that has been taken by the majority of English writers. Yet in the eyes of those who have roamed about this section of the river and have loved it, only at London Bridge does the river become really interesting. In the higher reaches it is



an idyllic river, swooning along through pleasant landscapes; after St. Paul's, it takes on a new and more sombre sort of glory, assumes a mightier interest, and is infinitely more majestic in the lifting of its waters. Above London Bridge, even when the wind is blowing, the waves are small and broken like those of a mountain lake; in the Pool, the water surges and heaves in broad masses, the light seems to deal with it more nobly, and the Thames assumes such majesty as becomes a stream which flows through the grandest city, and bears so great a proportion of the commerce, of the world." Truly the lower Thames has a beauty of its own, but it is beauty of the stern and manly sort, and it appeals, perhaps, to a different range of feelings from those that are aroused by the sight of the quiet and charming scenery of the upper portions of the river.

It is not necessary, however, to dwell on the beauty of the Thames below London Bridge. It is interest that most people will look for here. There is no beauty, perhaps, in the desolate spot that once was Woolwich Dockyard, or in the inelegant sheds that mark the site of England's greatest arsenal. Farther down, on the opposite shore at Tilbury, a work is in progress of which it is probably impossible at present to accurately forecast the results. The East and West India Dock Company is there constructing docks which, when completed, will be the largest in the world. Eight huge steamers will be able to coal at one time, and the main dock will cover an area of fifty-three acres. This, it is said, has been brought about by the Suez Canal. The long, weight-carrying, iron screw steamers, built to go through the canal, are not adapted to the windings and turnings of the Thames. There was a difficulty in bringing ships to the docks; consequently the docks are being taken to the ships.

We have passed on our way down Erith and Greenhithe, famous yachting-places. Beyond them on the Kentish shore, Gravesend, with its narrow streets, its quaint shops and houses, is also a great yachting centre. It is too the home of whitebait fishing, the fish being taken in open boats, in long peak-shaped nets with a very small mesh.

Away on the north shore of the river lies for some distance a tract of low, swampy country. Here is the abode of wildfowl, and here, during a hard winter when fowl are plentiful, there is abundance of sport to be had. It is hard work, and by no means without a spice of danger; but wildfowl-shooting is one of those things that, if a man has once taken up with it, he is never content to abandon. Canvey Island, flat, dismal, lies hereabouts, and is a favourite spot for punt shooters; but the sport has been somewhat overdone of late years, and the birds are now generally wild and difficult to get at. There are marshes, too, on the Kentish shore to the eastward of Thames Haven, but it is not safe to visit them without a guide.

Southend, which shares perhaps with Ramsgate and Margate the proud distinction of being the paradise of Cockaigne; Sheerness, with its dockyard and its forts; these are our halting-places on our road to the Nore, where the striped buoy falls to the rhythm of the short seas, and the waving ball that surmounts the tall pole catches the eye for a long distance, a welcome signal to homeward-bound ships.

We have reached the mouth of "The Royal River," and in bidding it adieu, we may quote once more the words of Mr. C. Austen Leigh:—

"And if, which God in heaven forefend,
On us an alien foe descend,
The ancient stream has many a son
To fight and win as Alfred won;
High deeds shall illustrate the shore,
And freedom shall be saved once more
On Tamise ripe."

W. T. MAINPRISE.

THE PHOTOGRAPHY OF THE HEAVENS.

BY WILLIAM HUGGINS, D.C.L., F.R.S.

IN TWO PAPERS.—FIRST PAPER.

IT is through light alone that we have any knowledge of the universe which lies outside the small speck-like planet on which we find ourselves. The eye, notwithstanding its great powers, is subject to several limitations in its reception, and in its interpretation of the light which reaches us. At the best, we are purblind, for the eye is sensitive to one octave only of light-waves—a small oasis in the great range of waves which come to us from luminous sources such as the sun and the stars. We may perhaps form some idea of our position in respect of light if we try to imagine what would be our condition musically, if our ears were as limited in range as are our eyes: if we were able to hear one octave of notes only in the middle of the key-board, and were deaf to all sounds above and below that small range of notes.

Another limitation arises from the circumstance that the eye is not able to profit by the cumulative effect of a continued luminous stimulus, which is too feeble to excite vision at the instant of falling upon the retina. We know that looking long does not enable us to perceive what is too faint to be seen at the first glance. Indeed, the eye speedily tires, and it is at the first glance only, and on a small part only of the retina, that we can discern the faint images of stars which are near the limit of our powers of vision.

As we have to use the same pair of eyes over again, the rapidity with which impressions fade out is an essential condition of the uninterrupted use of our eyes. Reading would be wearisome if it were necessary to wait, after turning over a page, for the impression of the former page to pass slowly from our eyes. The great rapidity with which the eye is able to present a *tabula rasa* to every new object is one of the most valuable of its powers.

There is also the limitation of area. It is only when the images on the retina are very minute, and even then only by an unconscious movement of the eye, that we can see (as we suppose at once) a large range of objects.

In all these points the photographic plate contrasts favourably with the eye, and is able to some extent to supplement it. By the choice of suitable substances, we can give to the plate the power of receiving the light which is invisible to the eye, because it lies beyond its range of power.

The action of a feeble light upon the plate accumulates by lengthened exposure, so that a star's image too feeble to produce a sensible photographic effect in one second may be able to impress itself strongly on the plate in one minute, by the cumulative effect of the sixty successive seconds of action. We shall see that for the faintest stars which have been photographed more than one hour's continuous action of the star's light has to be gathered up before a photographic image of sensible strength is obtained.

A plate, unlike the retina, retains the impression of the light which has come upon it, and so may be said to possess a memory which is unfailing. The plate can treasure up for all time the most complex forms, or