

ALL THE YEAR ROUND.

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GREAT EXPECTATIONS.

BY CHARLES DICKENS.

CHAPTER XLVII.

SOME weeks passed without bringing any change. We waited for Wemmick, and he made no sign. If I had never known him out of Little Britain, and had never enjoyed the privilege of being on a familiar footing at the Castle, I might have doubted him; not so for a moment, knowing him as I did.

My worldly affairs began to wear a gloomy appearance, and I was pressed for money by more than one creditor. Even I myself began to know the want of money (I mean of ready money in my own pocket), and to relieve it by converting some easily spared articles of jewellery into cash. But I had quite determined that it would be a heartless fraud to take more money from my patron in the existing state of my uncertain thoughts and plans. Therefore, I had sent him the unopened pocket-book by Herbert, to hold in his own keeping, and I felt a kind of satisfaction—whether it was a false kind or a true, I hardly know—in not having profited by his generosity since his revelation of himself.

As the time wore on, an impression settled heavily upon me that Estella was married. Fearful of having it confirmed, though it was all but a conviction, I avoided the newspapers, and begged Herbert (to whom I had confided the circumstances of our last interview) never to speak of her to me. Why I hoarded up this last wretched little rag of the robe of hope that was rent and given to the winds, how do I know! Why did you who read this, commit that not dissimilar inconsistency of your own last year, last month, last week?

It was an unhappy life that I lived, and its one dominant anxiety, towering over all its other anxieties like a high mountain above a range of mountains, never disappeared from my view. Still, no new cause for fear arose. Let me start from my bed as I would, with the terror fresh upon me that he was discovered; let me sit listening as I would, with dread, for Herbert's returning step at night, lest it should be fleetier than ordinary, and winged with evil news; for all that, and much more to like purpose, the round of things went on. Condemned to inaction and a state of constant restlessness and sus-

pense, I rowed about in my boat, and waited, waited, waited, as I best could.

There were states of the tide when, having been down the river, I could not get back through the eddy-chafed arches and starlings of old London Bridge; then, I left my boat at a wharf near the Custom House, to be brought up afterwards to the Temple stairs. I was not averse to doing this, as it served to make me and my boat a commoner incident among the water-side people there. From this slight occasion, sprang two meetings that I have now to tell of.

One afternoon, late in the month of February, I came ashore at the wharf at dusk. I had pulled down as far as Greenwich with the ebb tide, and had turned with the tide. It had been a fine bright day, but had become foggy as the sun dropped, and I had had to feel my way back among the shipping, pretty carefully. Both in going and returning I had seen the signal in his window. All well.

As it was a raw evening and I was cold, I thought I would comfort myself with dinner at once; and as I had hours of dejection and solitude before me if I went home to the Temple, I thought I would afterwards go to the play. The theatre where Mr. Wopsle had achieved his questionable triumph, was in that water-side neighbourhood (it is nowhere now), and to that theatre I resolved to go. I was aware that Mr. Wopsle had not succeeded in reviving the Drama, but, on the contrary, had rather partaken of its decline. He had been ominously heard of, through the playbills, as a faithful Black, in connexion with a little girl of noble birth, and a monkey. And Herbert had seen him as a predatory Tartar of comic propensities, with a face like a red brick, and an outrageous hat all over bells.

I dined at what Herbert and I used to call a Geographical chop-house—where there were maps of the world in porter-pot rims on every half-yard of the tablecloths, and charts of gravity on every one of the knives—to this day there is scarcely a single chop-house in the Lord Mayor's dominions which is not Geographical—and wore out the time in dozing over crumbs, staring at gas, and baking in a hot blast of dimmers. By-and-by, I roused myself and went to the play.

There, I found a virtuous boatswain in his Majesty's service—a most excellent man, though I could have wished his trousers not quite so tight in some places and not quite so loose in others—who knocked all the little men's

hats over their eyes, though he was very generous and brave, and who wouldn't hear of anybody's paying taxes, though he was very patriotic. He had a bag of money in his pocket, like a pudding in the cloth, and on that property married a young person in bed-furniture, with great rejoicings; the whole population of Portsmouth (nine in number at the last Census) turning on the beach, to rub their own hands and shake everybody else's, and sing "Fill, fill!" A certain dark-complexioned Swab, however, who wouldn't fill, or do anything else that was proposed to him, and whose heart was openly stated (by the boatswain) to be as black as his figure-head, proposed to two other Swabs to get all mankind into difficulties; which was so effectually done (the Swab family having considerable political influence) that it took half the evening to set things right, and then it was only brought about through an honest little grocer with a white hat, black gaiters, and red nose, getting into a clock, with a gridiron, and listening, and coming out, and knocking everybody down from behind with the gridiron whom he couldn't confute with what he had overheard. This led to Mr. Wopsle's (who had never been heard of before) coming in with a star and garter on, as a plenipotentiary of great power direct from the Admiralty, to say that the Swabs were all to go to prison on the spot, and that he had brought the boatswain down the Union Jack, as a slight acknowledgment of his public services. The boatswain, unmanned for the first time, respectfully dried his eyes on the Jack, and then cheering up and addressing Mr. Wopsle as Your Honour, solicited permission to take him by the fin. Mr. Wopsle conceding his fin with a gracious dignity, was immediately shoved into a dusty corner while everybody danced a hornpipe; and, from that corner, surveying the public with a disconcerted eye, became aware of me.

The second piece was the last new grand comic Christmas pantomime, in the first scene of which, it pained me to suspect that I detected Mr. Wopsle with red worsted legs under a highly magnified phosphoric countenance and a shock of red curtain-fringe for his hair, engaged in the manufacture of the thunderbolts in a mine, and displaying great cowardice when his gigantic master came home (very hoarse) to dinner. But he presently presented himself under worthier circumstances; for, the Genius of Youthful Love being in want of assistance—on account of the parental brutality of an ignorant farmer who opposed the choice of his daughter's heart, by purposely falling upon the object in a flour sack, out of the first-floor window—summoned a sententious Enchanter; and he, coming up from the antipodes rather unsteadily, after an apparently violent journey, proved to be Mr. Wopsle in a high-crowned hat, with a necromantic work in one volume under his arm. The business of this enchanter on earth, being principally to be talked at, sung at, butted at, danced at, and flashed at with fires of various colours, he had a good deal of time on his hands. And I observed with great

surprise, that he devoted it to staring in my direction as if he were lost in amazement.

There was something so remarkable in the increasing glare of Mr. Wopsle's eye, and he seemed to be turning so many things over in his mind and to grow so confused, that I could not make it out. I sat thinking of it, long after he had ascended to the clouds in a large watch-case, and still I could not make it out. I was still thinking of it when I came out of the theatre an hour afterwards, and found him waiting for me near the door.

"How do you do?" said I, shaking hands with him as we turned down the street together. "I saw that you saw me."

"Saw you, Mr. Pip!" he returned. "Yes, of course I saw you. But who else was there?"

"Who else?"

"It is the strangest thing," said Mr. Wopsle, drifting into his lost lock again; "and yet I could swear to him."

Becoming alarmed, I entreated Mr. Wopsle to explain his meaning.

"Whether I should have noticed him at first but for your being there," said Mr. Wopsle, going on in the same lost way, "I can't be positive; yet I think I should."

Involuntarily I looked round me, as I was accustomed to look round me when I went home; for these mysterious words gave me a chill.

"Oh! He can't be in sight," said Mr. Wopsle. "He went out, before I went off. I saw him go."

Having the reason that I had, for being suspicious, I even suspected this poor actor. I mistrusted a design to entrap me into some admission. Therefore, I glanced at him as we walked on together, but said nothing.

"I had a ridiculous fancy that he must be with you, Mr. Pip, till I saw that you were quite unconscious of him, sitting behind you there, like a ghost."

My former chill crept over me again, but I was resolved not to speak yet, for it was quite consistent with his words that he might be set on to induce me to connect these references with Provis. Of course I was perfectly sure and safe that Provis had not been there.

"I dare say you wonder at me, Mr. Pip; indeed I see you do. But it is so very strange! You'll hardly believe what I am going to tell you. I could hardly believe it myself, if you told me."

"Indeed?" said I.

"No, indeed. Mr. Pip, you remember in old times a certain Christmas Day, when you were quite a child, and I dined at Gargery's, and some soldiers came to the door to get a pair of handcuffs mended?"

"I remember it very well."

"And you remember that there was a chase after two convicts, and that we joined in it, and that Gargery took you on his back, and that I took the lead and you kept up with me as well as you could?"

"I remember it all very well." Better than he thought—except the last clause.

"And you remember that we came up with the two in a ditch, and that there was a scuffle between them, and that one of them had been severely handled and much mauled about the face, by the other?"

"I see it all before me."

"And that the soldiers lighted torches, and put the two in the centre, and that we went on to see the last of them, over the black marshes, with the torchlight shining on their faces—I am particular about that; with the torchlight shining on their faces, when there was an outer ring of dark night all about us?"

"Yes," said I. "I remember all that."

"Then, Mr. Pip, one of those two prisoners sat behind you to-night. I saw him over your shoulder."

"Steady!" I thought. I asked him then, "Which of the two do you suppose you saw?"

"The one who had been mauled," he answered readily, "and I'll swear I saw him! The more I think of him, the more certain I am of him."

"This is very curious!" said I, with the best assumption I could put on, of its being nothing more to me. "Very curious indeed!"

I cannot exaggerate the enhanced disquiet into which this conversation threw me, or the special and peculiar terror I felt at Compeyson's having been behind me "like a ghost." For, if he had ever been out of my thoughts for a few moments together since the hiding had begun, it was in those very moments when he was closest to me; and to think that I should be so unconscious and off my guard after all my care, was as if I had shut an avenue of a hundred doors to keep him out, and then had found him at my elbow. I could not doubt either that he was there, because I was there, and that however slight an appearance of danger there might be about us, danger was always near and active.

I put such questions to Mr. Wopsle as, When did the man come in? He could not tell me that; he saw me, and over my shoulder he saw the man. It was not until he had seen him for some time that he began to identify him; but he had from the first vaguely associated him with me, and known him as somehow belonging to me in the old village time. How was he dressed? Prosperously, but not noticeably otherwise; he thought, in black. Was his face at all disfigured? No, he believed not. I believed not, too, for, although in my brooding state I had taken no especial notice of the people behind me, I thought it likely that a face at all disfigured would have attracted my attention.

When Mr. Wopsle had imparted to me all that he could recal or I extract, and when I had treated him to a little appropriate refreshment after the fatigues of the evening, we parted. It was between twelve and one o'clock when I reached the Temple, and the gates were shut. No one was near me when I went in and went home.

Herbert had come in, and we held a very

serious council by the fire. But there was nothing to be done, saving to communicate to Wemmick what I had that night found out, and to remind him that we waited for his hint. As I thought that I might compromise him if I went too often to the Castle, I made this communication by letter. I wrote it before I went to bed, and went out and posted it; and again no one was near me. Herbert and I agreed that we could do nothing else but be very cautious. And we were very cautious indeed—more cautious than before, if that were possible—and I for my part never went near Chinks's Basin, except when I rowed by, and then I only looked at Mill Pond Bank as I looked at anything else.

CHAPTER XLVIII.

THE second of the two meetings referred to in the last chapter, occurred about a week after the first. I had again left my boat at the wharf below Bridge; the time was an hour earlier in the afternoon; and, undecided where to dine, I had strolled up into Cheapside, and was strolling along it, surely the most unsettled person in all the busy concourse, when a large hand was laid upon my shoulder, by some one overtaking me. It was Mr. Jagger's hand, and he passed it through my arm.

"As we are going in the same direction, Pip, we may walk together. Where are you bound for?"

"For the Temple, I think," said I.

"Don't you know?" said Mr. Jagger.

"Well," I returned, glad for once to get the better of him in cross-examination, "I do not know, for I have not made up my mind."

"You are going to dine?" said Mr. Jagger.

"You don't mind admitting that, I suppose?"

"No," I returned, "I don't mind admitting that."

"And are not engaged?"

"I don't mind admitting also, that I am not engaged."

"Then," said Mr. Jagger, "come and dine with me."

I was going to excuse myself, when he added, "Wemmick's coming." So I changed my excuse into an acceptance—the few words I had uttered serving for the beginning of either—and we went along Cheapside and slanted off to Little Britain, while the lights were springing up brilliantly in the shop-windows, and the street lamp-lighters, scarcely finding ground enough to plant their ladders on in the midst of the afternoon's bustle, were skipping up and down and running in and out, opening more red eyes in the gathering fog than my rushlight tower at the Hummums had opened white eyes in the ghostly wall.

At the office in Little Britain there was the usual letter-writing, hand-washing, candle-snuffing, and safe-locking, that closed the business of the day. As I stood idle by Mr. Jagger's fire, its rising and falling flame made the two casts on the shelf look as if they were playing a diabolical game at bo-peep with me; while the pair of coarse fat office candles that

dimly lighted Mr. Jiggers as he wrote in a corner, were decorated with dirty winding-sheets, as if in remembrance of a host of hanged clients.

We went to Gerrard-street, all three together, in a hackney-coach: and as soon as we got there, dinner was served. Although I should not have thought of making, in that place, the most distant reference by so much as a look to Wemmick's Walworth sentiments, yet I should have had no objection to catching his eye now and then in a friendly way. But it was not to be done. He turned his eyes on Mr. Jiggers whenever he raised them from the table, and was as dry and distant to me as if there were twin Wemmicks and this was the wrong one.

"Did you send that note of Miss Havisham's to Mr. Pip, Wemmick?" Mr. Jiggers asked, soon after we began dinner.

"No, sir," returned Wemmick; "it was going by post, when you brought Mr. Pip into the office. Here it is." He handed it to his principal, instead of to me.

"It's a note of two lines, Pip," said Mr. Jiggers, handing it on, "sent up to me by Miss Havisham, on account of her not being sure of your address. She tells me that she wants to see you on a little matter of business you mentioned to her. You'll go down?"

"Yes," said I, casting my eyes over the note, which was exactly in those terms.

"When do you think of going down?"

"I have an impending engagement," said I, glancing at Wemmick, who was putting fish into the post-office, "that renders me rather uncertain of my time. At once, I think."

"If Mr. Pip has the intention of going at once," said Wemmick to Mr. Jiggers, "he needn't write an answer, you know."

Receiving this as an intimation that it was best not to delay, I settled that I would go tomorrow, and said so. Wemmick drank a glass of wine and looked with a grimly satisfied air at Mr. Jiggers, but not at me.

"So, Pip! our friend the Spider," said Mr. Jiggers, "has played his cards. He has won the pool."

It was as much as I could do to assent.

"Hah! He is a promising fellow—in his way—but he may not have it all his own way. The stronger will win in the end, but the stronger has to be found out first. If he should turn to, and beat her—"

"Surely," I interrupted, with a burning face and heart, "you do not seriously think that he is scoundrel enough for that, Mr. Jiggers?"

"I didn't say so, Pip. I am putting a case. If he should turn to and beat her, he may possibly get the strength on his side; if it should be a question of intellect, he certainly will not. It would be chance work to give an opinion how a fellow of that sort will turn out in such circumstances, because it's a toss-up between two results."

"May I ask what they are?"

"A fellow like our friend the Spider," an-

swered Mr. Jiggers, "either beats, or cringes. He may cringe and growl, or cringe and not growl; but he either beats or cringes. Ask Wemmick his opinion."

"Either beats or cringes," said Wemmick, not at all addressing himself to me.

"So here's to Mrs. Bentley Drummle," said Mr. Jiggers, taking a decanter of choicer wine from his dumb-waiter, and filling for each of us and for himself, "and may the question of supremacy be settled to the lady's satisfaction! To the satisfaction of the lady *and* the gentleman, it never will be. Now, Molly, Molly, Molly, Molly, how slow you are to-day!"

She was at his elbow when he addressed her, putting a dish upon the table. As she withdrew her hands from it, she fell back a step or two, nervously muttering some excuse, and a certain action of her fingers as she spoke arrested my attention.

"What's the matter?" said Mr. Jiggers.

"Nothing. Only the subject we were speaking of," said I, "was rather painful to me."

The action of her fingers was like the action of knitting. She stood looking at her master, not understanding whether she was free to go, or whether he had more to say to her and would call her back if she did go. Her look was very intent. Surely, I had seen exactly such eyes and such hands, on a memorable occasion very lately!

He dismissed her, and she glided out of the room. But she remained before me, as plainly as if she were still there. I looked at those hands, I looked at those eyes, I looked at that flowing hair; and I compared them with other hands, other eyes, other hair, that I knew of, and with what those might be after twenty years of a brutal husband and a stormy life. I looked again at those hands and eyes of the house-keeper, and thought of the inexplicable feeling that had come over me when I last walked—not alone—in the ruined garden, and through the deserted brewery. I thought how the same feeling had come back when I saw a face looking at me, and a hand waving to me, from a stage-coach window; and how it had come back again and had flashed about me like Lightning, when I had passed in a carriage—not alone—through a sudden glare of light in a dark street. I thought how one link of association had helped that identification in the theatre, and how such a link, wanting before, had been riveted for me now, when I had passed by a chance swift from Estella's name to the fingers with their knitting action, and the attentive eyes. And I felt absolutely certain that this woman was Estella's mother.

Mr. Jiggers had seen me with Estella, and was not likely to have missed the sentiments I had been at no pains to conceal. He nodded when I said the subject was painful to me, clapped me on the back, put round the wine again, and went on with his dinner.

Only twice more, did the housekeeper reappear, and then her stay in the room was very short, and Mr. Jiggers was sharp with her.

But her hands were Estella's hands, and her eyes were Estella's eyes, and if she had reappeared a hundred times I could have been neither more sure nor less sure that my conviction was the truth.

It was a dull evening, for Wemmick drew his wine when it came round, quite as a matter of business—just as he might have drawn his salary when that came round—and with his eyes on his chief, sat in a state of perpetual readiness for cross-examination. As to the quantity of wine, his post-office was as indifferent and ready as any other post-office for its quantity of letters. From my point of view, he was the wrong twin all the time, and only externally like the Wemmick of Walworth.

We took our leave early, and left together. Even when we were groping among Mr. Jaggers's stock of boots for our hats, I felt that the right twin was on his way back; and we had not gone half a dozen yards down Gerrard-street in the Walworth direction before I found that I was walking arm-in-arm with the right twin, and that the wrong twin had evaporated into the evening air.

"Well!" said Wemmick, "that's over. He's a wonderful man, without his living likeness; but I feel that I have to screw myself up when I dine with him—and I dine more comfortably, unscrewed."

I felt that this was a good statement of the case, and told him so.

"Wouldn't say it to anybody but yourself," he answered. "I know that what is said between you and me, goes no further."

I asked him if he had ever seen Miss Havisham's adopted daughter, Mrs. Bentley Drummle? He said no. To avoid being too abrupt, I then spoke of the Aged, and of Miss Skiffins. He looked rather sly when I mentioned Miss Skiffins, and stopped in the street to blow his nose with a roll of the head and a flourish, not quite free from latent boastfulness.

"Wemmick," said I, "do you remember telling me before I first went to Mr. Jaggers's private house, to notice that housekeeper?"

"Did I?" he replied. "Ah, I dare say I did. Deuce take me," he added, suddenly, "I know I did. I find I am not quite unscrewed yet."

"A wild beast tamed, you called her," said I.

"And what do you call her?" said he.

"The same. How did Mr. Jaggers tame her, Wemmick?"

"That's his secret. She has been with him many a long year."

"I wish you would tell me her story. I feel a particular interest in being acquainted with it. You know that what is said between you and me goes no further."

"Well!" Wemmick replied, "I don't know her story—that is, I don't know all of it. But what I do know, I'll tell you. We are in our private and personal capacities, of course."

"Of course."

"A score of years ago, that woman was tried at the Old Bailey for murder, and was acquitted. She was a very handsome young woman, and I

believe had some gipsy blood in her. Anyhow, it was hot enough when it was up, as you may suppose."

"But she was acquitted."

"Mr. Jaggers was for her," pursued Wemmick, with a look full of meaning, "and worked the case in a way quite astonishing. It was a desperate case, and it was comparatively early days with him then, and he worked it to general admiration; in fact, it may almost be said to have made him. He worked it himself at the police-office, day after day for many days, contending against even a committal; and at the trial where he couldn't work it himself, sat under Counsel, and—every one knew—put in all the salt and pepper. The murdered person was a woman; a woman, a good ten years older, very much larger, and very much stronger. It was a case of jealousy. They both led tramping lives, and this woman in Gerrard-street here had been married very young, over the broomstick (as we say), to a tramping man, and was a perfect fury in point of jealousy. The murdered woman—more a match for the man, certainly, in point of years—was found dead in a barn near Hounslow Heath. There had been a violent struggle, perhaps a fight. She was bruised and scratched and torn, and had been held by the throat at last and choked. Now, there was no reasonable evidence to implicate any person but this woman, and, on the improbabilities of her having been able to do it, Mr. Jaggers principally rested his case. You may be sure," said Wemmick, touching me on the sleeve, "that he never dwelt upon the strength of her hands then, though he sometimes does now."

I had told Wemmick of his showing us her wrists, that day of the dinner party.

"Well, sir!" Wemmick went on; "it happened—happened, don't you see?—that this woman was so very artfully dressed from the time of her apprehension, that she looked much slier than she really was; in particular, her sleeves are always remembered to have been so skilfully contrived, that her arms had quite a delicate look. She had only a bruise or two about her—nothing for a tramp—but the backs of her hands were lacerated, and the question was, was it with finger-nails? Now, Mr. Jaggers showed that she had struggled through a great lot of brambles which were not as high as her face; but which she could not have got through and kept her hands out of; and bits of those brambles were actually found in her skin and put in evidence, as well as the fact that the brambles in question were found on examination to have been broken through, and to have little shreds of her dress and little spots of blood upon them here and there. But the boldest point he made, was this. It was attempted to be set up in proof of her jealousy, that she was under strong suspicion of having, at about the time of the murder, frantically destroyed her child by this man—some three years old—to revenge herself upon him. Mr. Jaggers worked that, in this way. 'We say these are not marks of finger-nails, but marks of brambles, and we show you the

brambles. You say they are marks of finger-nails, and you set up the hypothesis that she destroyed her child. You must accept all consequences of that hypothesis. For anything we know, she may have destroyed her child, and the child in clinging to her may have scratched her hands. What then? You are not trying her for the murder of her child; why don't you? As to this case, if you *will* have scratches, we say that, for anything we know, you may have accounted for them, assuming for the sake of argument that you have not invented them?" To sum up, sir," said Wemmick, "Mr. Jaggers was altogether too many for the Jury, and they gave in."

"Has she been in his service ever since?"

"Yes; but not only that," said Wemmick. "She went into his service immediately after her acquittal, tamed as she is now. She has since been taught one thing and another in the way of her duties, but she was tamed from the beginning."

"Do you remember the sex of the child?"

"Said to have been a girl."

"You have nothing more to say to me to-night?"

"Nothing. I got your letter and destroyed it. Nothing."

We exchanged a cordial Good Night, and I went home, with new matter for my thoughts, though with no relief from the old.

RECENT DISCOVERIES CONCERNING LIGHT.

IN the year 1666 the young Mr. Isaac Newton, then an unknown Bachelor of Arts of the University of Cambridge, little more than twenty-three years of age, first made the discovery of the compound nature of white light, and he described this discovery a few years afterwards, in a letter to a friend, as "in my judgment the oddest, if not the most considerable detection which hath hitherto been made in the operations of nature."

Let us pause here a moment to explain clearly what this "detection" or discovery amounted to, premising that one of its first fruits had already appeared (in 1669) in the construction of a reflecting telescope. Before the publication of Newton's researches in 1671, the sources and nature of coloured, as distinguished from white light had not even been the subject of a rational conjecture. Dr. Barrow, the latest and best authority, had described white, as being "that which discharges a copious light equally clear in every direction." "Black," he goes on to state, "is that which does not emit light at all, or which does it very sparingly. Red is that which emits a light more clear than usual, but interrupted by shady interstices. Blue is that which discharges a rarefied light, as in bodies which consist of white and black particles, arranged alternately. Green is nearly allied to blue. Yellow is a mixture of much white and a little red; and purple consists of a great deal of blue, mixed with a small portion

of red." By causing a ray of the sun's light to pass first through a round aperture in a shutter and then through a prism of glass, and afterwards receiving the image on a screen in a darkened room, Newton found that its shape was no longer round, but oblong, and he seems to have been the first to notice that it consisted of variously coloured light. Every part of the ray had been turned or bent aside, as was known to be the result when light passes from one medium—such as air—into another of different density, like glass; but the image showed that the white light was, in fact, made up of a mixture of red, yellow, and blue rays, of which the red were least bent and the blue most, the yellow occupying the middle place.

It was further noticed that the coloured image of the sun thus obtained, while retaining the breadth that it would have had, if not broken up into colours, was now five times as long, and by allowing each colour in succession to pass through a round hole, similar to the first, and then through a second prism into another chamber, also darkened, it was found that the coloured image was now, as before, bent aside, but was not altered again in shape. It was remarked, too, that in the second, as in the first bending or refraction, red rays were not so much bent by the prism as the yellow, and the yellow not so much as the blue. It was hence concluded that each ray of white light coming from the sun, was made up of rays of several colours—red, yellow, and blue being the chief—that these simple colours were all more or less, but each differently, bent in passing from one transparent body to another, and that, having been once decomposed, the various colours were not susceptible of further change.

Newton afterwards, by various other experiments, fully satisfied both himself and all his contemporaries, that this view of the compound nature of light was correct, and that, in fact, all the marvellous beauties and effects of colour are produced by the different proportion in which the colour rays that together form white light are absorbed, transmitted, or reflected by various substances before they reach the eye. The delicate pink reflected from a snowy mountain at sunset is due to the slight excess of blue and yellow rays absorbed by vapour when the sun's light passes aslant through a vast thickness of air; the yellow of the buttercup results from the structure of the petals of the flower which happen to absorb blue and red light but reflect the remaining rays, and the exquisite blue of the ocean and sky result from the absorption of red and yellow rays in clear dry air and the reflexion or transmission of the rest, the constant alteration observed in these respects being caused by the frequent change that takes place in the air in reference to visible moisture.

By very careful observations made with fine prisms, assisted by other optical contrivances, Dr. Wollaston first, and afterwards M. Fraunhofer, of Munich, discovered that the oblong image of coloured light obtained by decomposing