

## **The circulation.**

### **Contributors**

Dickens, Charles, 1812-1870.  
Royal College of Surgeons of England

### **Publication/Creation**

[London] : [publisher not identified], 1857.

### **Persistent URL**

<https://wellcomecollection.org/works/sfunb2jm>

### **Provider**

Royal College of Surgeons

### **License and attribution**

This material has been provided by This material has been provided by The Royal College of Surgeons of England. The original may be consulted at The Royal College of Surgeons of England. where the originals may be consulted. This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.



Wellcome Collection  
183 Euston Road  
London NW1 2BE UK  
T +44 (0)20 7611 8722  
E [library@wellcomecollection.org](mailto:library@wellcomecollection.org)  
<https://wellcomecollection.org>

faithful kneel, the tapers burn, and the miraculous cures are sought. Normans and Jacobins, philosophers and poets, have no doubt had their moments of sway; but for every month of their rule G  n  vi  ne has reigned a century. The massacres of September may have retainted the massacres of Saint Bartholomew's Day; but always and still the Parisians are G  n  vi  nians, and Lutetia is G  n  vi  . Books, statues, and pictures, may embody other names, but she is in the hearts of the crowd. The spell which is stronger than all other spells in the nineteenth century, as in long bygone centuries, is the incantation of the Saintly Isis of the Holy Mountain. The blue and white banner spangled with stars, of the sainte, still makes thousands of eyes sparkle in the city of the Seine, and the invocation still thrills many souls whenever it is heard:

*Sancta Genovefa Urbis et Gallie Patrona, ora pro nobis.*

Holy G  n  vi  ne, patroness of the city and country of Gaul, pray for us!

### THE CIRCULATION.

To arrive at a truth, it is often necessary to hew the way through a thicket of error; and one man's labour does not always suffice to do the work. Sometimes, when the screen is nearly removed by the efforts of several successive pioneers, a few remaining tangled branches will still serve to intercept a clear view of the important fact about to be revealed. So it was with the discovery of the circulation of the blood, which Harvey had the honour of finally inaugurating, though numerous predecessors had put their hand to the achievement. The task was spread over more than a single epoch. Among the ancients, Galen began by refuting Erasistratus; whilst in modern times, the student Fagon risked an audacious act which, at that date, could only be undertaken by a young man, and only justified by great success. He maintained in a thesis the circulation of the blood; and the old doctors allowed that he defended this strange paradox with a talent worthy of a better cause!

Three important errors had to be swept away, before Harvey could arrive at his grand conclusion. Erasistratus, the author of the first, believed that the arteries contained not blood, but air only. According to his ideas, we breathe for no other purpose than to fill the arteries with air. The arteries were air-channels, whence their name, derived from two Greek words, signifying to draw air. The air, drawn in by the lungs, reached them by the trachea-artery, properly so called; from the trachea, it passed into the venous artery (now called the pulmonary vein); from the venous artery, it passed into the left ventricle, and from the left ventricle, it (always the air) passed into the arteries, which carried it to the members. What we now call the

sanguineous system, or the circulating system, was then divided into two systems—the arterial or a  rial system, and the venous or sanguinary system.

But, said Galen, when you open an artery, blood flows from it. Either, therefore, blood was contained in it, or has come into it from some other source. But if it comes from elsewhere, if the artery contains air alone, the contained air ought to issue from it before the blood; which is not the case. There issues blood, and not a particle of air. Therefore, the arteries contain blood only. Galen made another experiment. He intercepted a portion of an artery between two ligatures; he then opened the portion between them, and found nothing but blood. Again, therefore, the arteries contain blood, and nothing else.

"But," argued the partisans of Erasistratus, "if the arteries contain blood, how can the air which is inspired by the lungs, pass throughout the whole body?"

"It does not pass throughout it," answered Galen. "The air drawn in, is sent out again. It serves the purposes of respiration, by its temperature, and not by its substance. It cools the blood, and that is the only use of respiration."

It is true that this is far from what we know about respiration at the present day; it is even contrary to the fact. Instead of cooling the blood, respiration warms it, being the only source of animal heat. Nevertheless, relatively to Erasistratus, who asserted that the air traversed the arteries in totality, in mass, in substance, exactly as it passes down the windpipe; that it was air which distended the arteries, which made them beat, which was the cause of the pulse: Galen's idea was an advance in science, and such an advance that the whole force of physiology could not set a step further without the aid of modern chemistry. Haller still believed that respiration cooled the blood. Galen, therefore, demolished error the first; he was less fortunate with the remaining two. Still he proved that the arteries contain no air, but blood only, like the veins. An entire half of the sanguineous system, detached from that system by a mere hypothesis, was restored to it; and as the circulation is no other than the movement which incessantly carries the blood from the heart to the arteries, from the arteries to the veins, and by means of the veins brings it back to the heart—the discovery of the circulation of the blood was impossible, so long as the arteries were supposed to be filled with air alone. Until the step which Galen made, any other progress was impracticable.

Error the second. The partition, or diaphragm, which separates the two ventricles of the heart, is not pierced with holes, minute or large; there is no passage through it. How, then, did it happen that Galen believed, nay, even saw that there was a passage?



Simply because he imagined there must be one. A lesson, this, for observers in the physical sciences. Galen's theory was, that the veins, like the arteries, carried the blood to the members; but there were two bloods—namely, the spirituous blood, the blood of the arteries and of the left ventricle; and the venous blood, the blood properly so called, the blood of the veins and of the right heart. And this, again, was an advance. It was the first indication of two kinds of blood, now so clearly distinguished, the arterial and the venous blood, the red blood and the black blood, the blood which has breathed, and that which has not breathed. According to Galen, each of his two bloods had a special destination; the spirituous blood nourished the light and delicate organs, such as the lungs; the venous blood fed the coarse and heavy organs, such as the liver. The spirit, the purest portion of the blood, was only formed in the left ventricle; and, as the venous blood, to be serviceable for nutrition, required a certain portion of spirit, therefore the two ventricles must have a communication, which took place by means of the pretended holes in the partition which separates them. For Galen, then, this partition was traversable by the blood, because he had adopted a theory which required it to be so. For the early modern anatomists, this partition was pierced, because Galen had said so. Berenger de Carpi was the first to confess that the holes were not very visible; and Vésale, the father of modern anatomy, alone dared to assert that they do not exist. But he does not go so far as that all at once. He begins by repeating, with all the others, that the blood passed from one ventricle to the other by the holes in the partition; but soon, carried away by the force of the fact which he beholds, and which he has within his grasp, he declares that he only spoke in that way to fall in with Galen's dogmas; for, in reality, the tissue of which the partition is composed is just as thick and compact as the rest of the heart; and through this thick tissue not a single drop of blood could pass. Vésale had made a grand stride in advance.

The next step, the discovery of the pulmonary circulation, was due to Servetus, as a single admirable passage from his works demonstrates. "The communication," he says (that is, the passage of the blood from the right ventricle into the left), "is not made through the partition between them, as is commonly imagined; but, by a long and wonderful détour, the blood is conducted through the lungs, where it is agitated and prepared, where it becomes yellow, and passes from the arterial vein into the venous artery." The new idea is comprised in these words; the completed idea, which gave us the pulmonary circulation, consisted in comprehending that the blood passes from the pulmonary artery into the pulmonary vein; that the blood, starting from the right heart by the

pulmonary artery, returns to the left heart by the pulmonary vein; that the blood, proceeding from the heart, goes back to the heart; that there is, consequently, a circulation, a circuit. This idea, so grand, so novel, of a circulation, a circuit, was first entertained by Servetus. He was a man of considerable genius: of his theological works this is not the place to speak. But, whether his doctrines were right or wrong, at least he did not burn Calvin at the stake, but was burnt by him. Singularly enough, the book which brought him to a heretic's death, and which contains his purely and profoundly physiological discovery, is entitled, "*Christianismi Restitutio*," the Restitution of Christianity. In theology, he persisted in maintaining the literal sense of texts, and so accepted the passage, "the blood is the life,"—"*anima est in sanguine; anima ipsa est sanguis*." Hence his researches into the formation of the blood, and the inferences which led him to the pulmonary circulation. He called attention to the mingling of air with the blood in the lungs, remarking that its bright colour is given to the blood by the lungs, and not by the heart. We now know that it is not the whole of the air, but only the oxygen contained in it, which produces the change of colour. But with that exception, with the exception of the analysis of the air, which Servetus was unable to forestall, and which is the marvel of modern chemistry, how correct the idea is! Servetus not only discovered the true course of the blood from one side of the heart to the other, through the lungs; but he discovered the true seat of sanguification, of the transformation of the blood, of the change of black blood into red. Galen fixed the place of sanguification in the liver; Servetus was the first who referred it to the lungs. The truth was not remarked at the time, and its scope was not understood till much later; and, in fact, only received its full development from the experiments of more recent physiologists, as Goodwin and Bichat.

Six years after Servetus, Realdo Colombo, one of the best anatomists ever possessed by Padua (where there have been many), discovered independently the pulmonary circulation. Finally, Césalpin, without quoting Colombo (which he certainly would have done had he known his publication), discovered, in his turn, the pulmonary circulation; and this time it is not merely the fact which appears, but the word. Césalpin formally styles the passage of the blood from one half of the heart to the other, by the lungs, "circulation." The pulmonary circulation was, therefore, revealed; but, up to this point, up to Césalpin—of the general circulation, of the circulation of the whole body, of the circulation which is called the grand, in distinction to the pulmonary, which is called the little—of the general circulation, not a single word.

Galen had contrived a very symmetrical



physiology; he had four temperaments, and four humours. He had three spirits, and three sources of those spirits. Moreover, the brain was the origin of all the nerves; the heart the origin of all the arteries; the liver the origin of all the veins. The veins proceeding from the liver carried the blood to the members; a strange mistake, which the most simple experiment, or even the most simple attention to an every-day experiment, would have sufficed to rectify. For, in fact, bleeding was practised daily, and every-day people could see the vein swell below and not above the ligature. Consequently, in the veins, the blood flowed from the members towards the heart, and not from the heart to the members. Césalpin is the first—the only one before Harvey—who called attention to this swelling of the veins which, as just observed, always takes place below and never above the ligature. But Césalpin had a mind of a superior order; he was the first among the moderns to avail himself of a method in natural science—that is, of classification founded on organisation. He has the double glory of giving us a method, and of communicating the idea of the two circulations.

Fabricius, of Acquapendente, also enjoys a double glory. He was Harvey's master, and in fifteen hundred and seventy-four he discovered the valvules of the veins. He saw clearly that they are directed towards the heart. They prevent, therefore, the passage of the blood in the veins in the direction from the heart to the members; it flows, therefore, from the members to the heart, the reverse of what takes place in the arteries, which have no valvules. The valvules of the veins are the anatomical proof of the circulation of the blood; the proof that it makes a circuit, that it returns to the point whence it started; but Fabricius did not perceive that proof. He observed the fact, but failed to draw from it the important inference which Harvey alone was able to deduce.

When Harvey appeared, every point relative to the circulation had been already indicated or suspected—nothing was established. And so true is that assertion, that Fabricius, who came after Césalpin, and who discovered the valvules of the veins, was ignorant of the circulation. Césalpin himself, who observed so well the two circulations, mingled the error of the passage through the partition of the ventricles with the idea of the pulmonary circulation. Colombo repeats, with Galen, that the veins spring from the liver, and carry the blood to the members.

Sprengel is right in saying that Harvey is best explained by his education at Padua. Doubtless, it was fortunate for Harvey to be educated at Padua; but also it was fortunate for the circulation to fall into the hands of Harvey, the man most competent to study it, to investigate its phenomena thoroughly, and

to explain their full import. Harvey's work is a masterpiece. This little book of a hundred pages is the finest literary effort physiology has produced. Harvey begins by the movements of the heart; and first he remarks that the auricle and the ventricle of each heart contract successively. After the heart, come the arteries. Galen had said that the arteries beat in consequence of a pulsative virtue, which they derive from the heart through their coats. Harvey, by opening an artery, and watching the unequal jets in which the blood issued from it, concluded that an artery beats by impulsion,—by the blow of the blood with which it is distended. If the artery dilated of itself, it would not be at the moment when it swells that it would drive the blood with the greatest force. Harvey took advantage of a case of ossification of the crural artery which he had occasion to observe. The artery beat below the ossification, which, therefore, did not intercept the effect of the pretended pulsative virtue; or, rather, that virtue has no existence. The pulsation of the arteries is due solely to the movement of the blood, to the impulse of the blood on the coats of the arteries.

From the arteries, Harvey proceeds to the veins; and there he draws from the valvules their full import—namely, that they allow the blood to move only in one direction. Lastly, Harvey comes to his experiments. They are few, but decisive, indicative of his genius. When a limb is slightly bound, the blood is checked in the veins only, because the veins alone are superficial. If the limb be bound more tightly, the blood is stopped in the arteries also, which are deep-seated. When a vein is compressed, the swelling takes place below the ligature; when an artery is compressed, it swells above the ligature. The blood, therefore, flows in contrary directions in the veins and in the arteries; in the veins, it goes from the members to the heart; in the arteries, from the heart to the members.

When any artery is opened and the blood allowed to flow without check, the whole of the blood contained in an animal's body will issue by this orifice. Therefore, all the parts of the circulating apparatus must communicate with each other—the heart, the arteries, and the veins. And if, in fact, you think of the prodigious rapidity of the current of the blood, you will see that it cannot be otherwise; for as soon as the blood has entered the heart, it leaves it to pass to the arteries; as soon as it has entered the arteries, it is driven forward to pass over to the veins; as soon as it is in the veins, it is sent on to the heart again. It flows, therefore, continually from the heart to the arteries, from the arteries to the veins, and from the veins to the heart. This movement, this continual return, is the circulation.

Modern physiology takes its date from the discovery of the circulation of the blood,



which marks the advent and accession of the moderns to scientific power and independence. Hitherto they had followed the ancients; now, they dared to walk alone. Three years afterwards, Aselli discovered the chyliferous vessels; subsequently, Pecquet pointed out the reservoir of the chyle, and Rudbeck and Thomas Bartholin the lymphatic vessels—all unknown, or very obscurely known, to the ancients. Harvey had discovered the most beautiful phenomenon in the animal economy, which was beyond the reach of antiquity. The mantle of authority fell from classic shoulders to adorn those of the English physician. Doctors, instead of swearing by Galen and Aristotle, were now compelled to swear by Harvey.

Not that the novel conquest was effected without violent rebellions and attempts at counter-revolution. It was regarded as a dangerous heresy; when ridicule failed to crush it, there was little scruple in employing something like persecution. Still it was the faculty alone, and not the nation, who showed this repugnance to a novel truth. Molière laughed at Gui-Patin, while Boileau satirised the faculty in general. Harvey had no sooner published his book on the circulation of the blood, than twenty anatomists took up their pens to assail it. Harvey did not answer them. Riolan, the most learned anatomist of his time, was the only man whom Harvey honoured with a reply. When his enemies found they were unable to provoke him into saying a word in self-defence, they got tired of waging an aggressive criticism, and allowed the novel doctrine to spread and make its way.

Molière's famous Chorus of Doctors, and his other bitter jibes, were hardly a joke or a caricature of Gui-Patin's practice; for, starting with the laudable idea of simplifying medical treatment, he reduced it to the sole remedies of bleeding and purging. A statement of what he did in that line would be believed an exaggerated stretch of the long-bow, if it were not extracted from his own letters. He bled patients at every age, infants as well as old people; he bled a patient thirty-two times for one and the same illness; he had himself bled seven times for a cold; he bled his mother-in-law, who was eighty years of age, four times; he bled a child three days old; he bled his own wife eight times from the veins of her arm, and then he bled her from the veins of her foot. She recovered, and he exclaimed, "Bleeding for ever!" He purged a patient, every other day, thirty-two times; then he talks of another patient who was bled, in all, twenty-two times and purged forty times, "We cure many more sick persons," says Gui-Patin, "with a good lancet and a pound of senna, than the Arabs could cure with their whole pharmacopœia of syrups and opiates." Such

a man was Harvey's most formidable adversary.

At the present day we have the means of actually witnessing with our own eyes, the phenomenon so furiously denied by a crowd of learned physicians. M. Flourens, Professor in the College of France—to whose learned history of the discovery I am indebted for the materials of the preceding narrative—demonstrates the fact by a striking experiment. In his lessons at the Jardin des Plantes, in order to imitate, before the eyes of his pupils, the passage of the blood from the arteries to the veins, he opens the crural artery and vein in the leg of a dead dog. He inserts a pipe into the open end of the artery, and injects water by means of a syringe. In a very few instants, the water, injected into the artery, returns by the vein. It is the complete representation of the circulation of the blood. But, by means of the microscope, the circulation in the living animal may be distinctly beheld. All that is required is to select some part sufficiently thin to allow the transmission of light through its substance. The ear of a mouse will do, but is inconvenient; the wing of a bat might answer better. Or, the tail of a small fish (such as an eel, a minnow, or a stickleback), confined in a glass tube—or the gills of a young newt—will serve the purpose. The web of a frog's foot is commonly used; the tongue of that victim reptile is vaunted as displaying the spectacle marvellously; but, as I pleaded in a late article, is too cruel a mode to be adopted for the gratification of everyday curiosity. "This method," as Dr. Carpenter humanely observes, "is so much more distressing to the animal, that its employment seems scarcely justifiable for the mere purpose of display; and nothing but some anticipated benefit to science can justify the laying open the body of the living animal, for the purpose of examining the circulation of its lungs or mesentery." The tail of a tadpole offers a very ready means, and shows you the pigment-cells into the bargain. An advantage is, that the blood-corpuscles in the tadpole are larger than in the human subject. They are also oval instead of being circular. You may trace the red corpuscles running along the arteries, then entering the capillaries or hair-like vessels, which are so small and narrow that the corpuscles can only pass one at a time—and that, end foremost. These capillaries are the communicating tubes, the connecting transit from the arteries to the veins; and you may watch the blood-discs, which have traversed the border-land in Indian file, returning in congregated troops to the heart, thence to repeat their round as long as life shall last. The camel tribe, exceptional animals in other respects, are the only mammal quadrupeds which have the blood-discs oval. Of common animals, the goat has very small corpuscles, but they are twice as large



as those of the musk-deer. The large size of the blood-discs in the frog family has been of great convenience to students of physiology, allowing their movements to be watched under what microscopists would call a low power, or one that magnifies a hundred diameters, or thereabouts, more or less.

### STORY OF A GRAVE.

HERE, while yon sunset's golden overflow  
Touches the churchyard with its dream of Heaven,  
Rest on this grave beneath the solemn glow,  
The grave, the garden where my heart hath striven  
To plant its hopes, that hence their trailing flowers  
Might climb to colour in celestial bowers.

Here sleeps my only son : this grave's sad length  
Tells thee that death no dreaming babe beguiled,—  
A stately man in stature and in strength,  
Only in tenderness to me a child.  
How well that tenderness my heart supplied  
I knew but by its craving when he died.

But still it feels the thrill of its old joy  
When friends rare genius in the babe foretold,  
Or said the strange, sweet fancies of the boy,  
Rich as red rose-leaves, hid a heart of gold ;  
And when his life fulfill'd the prophecy,  
My dear, dear child, he gave the praise to me.

Ah, Hope's bright name to me seem'd written o'er  
Each grave book gather'd from his father's toil,  
While greedily I learn'd their ancient lore  
To drop it softly on my precious soil.  
Hope lighted up the glorious path he tried,  
And wise men mark'd his steps, and then he died.

Had I no triumph when great spirits caught  
Fire from the kindling of his soul-lit eye ?  
I, who had seen its first soft glimmering thought  
Like a star trembling in a dewy sky,  
Watch'd the first rapture of its childish glance  
At fairy-tale, and poem, and romance.

Eyes true and clear, as when at morn and even  
They fill'd with baby-worship at my knee,—  
O, 'twas the earnest of an early heaven.  
The Eden-dew of pure simplicity  
Upon my pleasant plant was never dried,  
God gather'd it, and mortals said he died.

I taught him first the beautiful to see,  
Folded in flowers, glowing in green leaves ;  
Touch'd him with moonlight and cloud scenery,  
Pour'd the soft purple of still summer eves  
Over his fancy in its young fresh glow ;  
But, O ! the beauty mirror'd in it now !

He was a poet born, and his last dream  
Now sweeps its noble music through the land ;  
And yet how dear the charm'd verses seem,  
Penn'd to his mother by his boyish hand.  
Love sings his life-song with unbroken pride ;  
Alas ! with this refrain, he died, he died !

And still to me his room is holy ground,  
There hang his paintings as in days gone past,  
There all his instruments of lovely sound,  
His books,—one open where he read it last !  
And in the window stand his desk and chair :  
I sometimes fancy that he too is there.

But I should tell thee, in his spirit's shrine,  
Was one to whom his inmost self had grown,  
Through whose poor mind he pour'd his thoughts like  
wine,  
And deem'd their colour'd beauty all her own.  
I almost grudged him to that fend young bride,—  
O ! I repented sorely when he died !

Fondness—it perish'd in the grave's chill air,  
Frail as the feathers of a butterfly ;  
She was so young, so exquisitely fair,  
Perhaps 'twas natural her love should die.  
She wedded soon, that gave him back to me,  
Yet I was jealous for his memory.

And thus his young heroic life was shed,—  
His only foe was drowning in his sight,  
He saved him, then went weary to his bed,  
Nor rose from that triumphant woeful night.  
My gallant boy ! his virtues high were tried,  
Thank God, he flinch'd not, though he therefore died.

His father, 'neath that grief hath fail'd so fast,  
Since then, his hair, but not with age, is white ;  
Mine, at the moment when the spirit pass'd,  
Turn'd iron-grey, as with some sudden blight,  
When to the silent lips my own I press'd,  
And hunger'd for one breath, and felt his rest.

My coming loss God show'd me tenderly.  
A little daughter in my heart he set,  
Few years before it wept its broken tree.  
I saw not in my half-shut violet  
How large the mercy its fresh leaves could hide,  
Nor felt the gentle warning till he died.

But well I know he died to realise  
The holy beauty of his high-wrought dream ;  
Yea, in my soul, I see his star-like eyes  
Burn with some glorious spiritual theme ;  
Nor think his aspirations high were given  
To flutter here and fold their wings in heaven.

To him that marble did his townsmen rear :  
And showing whence he caught poetic fire,  
See how the grand, serene Archangel there  
Casts down the wreath but carries up the lyre ;  
And I, I planted on the sacred spot  
The weeping willow and forget-me-not.

The blessings of the poor fall over it,  
And fresh wild flowers from childish fingers rain ;  
Here oft his father and his sister sit  
With me, and talk him back to us again,  
Knowing there is a rest that doth abide,  
Where we shall soon forget that he hath died.

### THE DEAD SECRET.

#### CHAPTER THE TWENTY-SEVENTH. FORTY THOUSAND POUNDS.

No popular saying is more commonly accepted than the maxim which asserts, that Time is the great consoler ; and, probably, no popular saying more imperfectly expresses the truth. The work that we must do, the responsibilities that we must undertake, the example that we must set to others,—these are the great consolers, for these apply the first remedies to the malady of grief. Time possesses nothing but the negative virtue of helping it to wear itself out. Who that has observed at all, has not perceived that those



among us who soonest recover from the shock of a great grief for the dead, are those who have most duties to perform towards the living? When the shadow of calamity rests on our houses, the question with us is, not how much time will suffice to bring back the sunshine to us again, but how much occupation have we got to force us forward into the place where the sunshine is waiting for us to come? Time may claim many victories, but not the victory over grief. The great consolation for the loss of the dead who are gone is to be found in the great necessity of thinking of the living who remain.

The history of Rosamond's daily life, now that the darkness of a heavy affliction had fallen on it, was in itself the sufficient illustration of this truth. When all the strength even of her strong character had been prostrated by the unspeakably awful shock of her mother's sudden death, it was not the slow lapse of time that helped to raise her up again, but the necessity which would not wait for time—the necessity which made her remember what was due to the husband who sorrowed with her, to the child whose young life was linked to hers, and to the old man whose helpless grief found no support but in the comfort she could give, learnt no lesson of resignation but from the example she could set.

From the first, the responsibility of sustaining him had rested on her shoulders alone. Before the close of day had been counted out by the first hour of the night, she had been torn from the bedside by the necessity of meeting him at the door, and preparing him to know that he was entering the chamber of death. To guide the dreadful truth gradually and gently, till it stood face to face with him, to support him under the shock of recognising it, to help his mind to recover after the inevitable blow had struck it at last, these were the sacred duties which claimed all the devotion that Rosamond had to give, and which forbade her heart to dwell selfishly on its own grief. It was not the least of the trials she had now to face, to see the condition of vacant helplessness to which he was reduced under the weight of an affliction which he had no strength to bear.

He looked like a man whose faculties had been stunned past recovery. He would sit for hours with the musical-box by his side, patting it absently from time to time, and whispering to himself as he looked at it, but never attempting to set it playing. It was the one memorial left that reminded him of all the joys and sorrows, the simple family interests and affections of his past life. When Rosamond first sat by his side and took his hand to comfort him, he looked backwards and forwards with forlorn eyes from her compassionate face to the musical-box, and vacantly repeated to himself the same words

over and over again: "They are all gone—my brother Max, my wife, my little Joseph, my sister Agatha, and Sarah my niece! I and my little bit of box are left alone together in the world. Mozart can sing no more. He has sung to the last of them now!"

The second day there was no change in him. On the third, Rosamond placed the book of Hymns reverently on her mother's bosom, laid a lock of her own hair round it, and kissed the sad, peaceful face for the last time. The old man was with her at that silent leave-taking, and followed her away, when it was over. By the side of the coffin, and, afterwards, when she took him back with her to her husband, he was still sunk in the same apathy of grief which had overwhelmed him from the first. But when they began to speak of the removal of the remains the next day to Porthgenna churchyard, they noticed that his dim eyes brightened suddenly, and that his wandering attention followed every word they said. After a while, he rose from his chair, approached Rosamond, and looked anxiously in her face. "I think I could bear it better if you would let me go with her?" he said. "We two should have gone back to Cornwall together, if she had lived. Will you let us still go back together now that she has died?"

Rosamond gently remonstrated and tried to make him see that it was best to leave the remains to be removed under the charge of her husband's servant, whose fidelity could be depended on, and whose position made him the fittest person to be charged with cares and responsibilities which near relations were not capable of undertaking with sufficient composure. She told him that her husband intended to stop in London, to give her one day of rest and quiet which she absolutely needed, and that they then proposed to return to Cornwall in time to be at Porthgenna before the funeral took place; and she begged earnestly that he would not think of separating his lot from theirs at a time of trouble and trial, when they ought to be all three most closely united by the ties of mutual sympathy and mutual sorrow.

He listened silently and submissively while Rosamond was speaking, but he only repeated his simple petition when she had done. The one idea in his mind, now, was the idea of going back to Cornwall with all that was left on earth of his sister's child. Leonard and Rosamond both saw that it would be useless to oppose it, both felt that it would be cruelty to keep him with them, and kindness to let him go away. After privately charging the servant to spare him all trouble and difficulty, to humour him by acceding to any wishes that he might express, and to give him all possible protection and help without obtruding either officiously on his attention, they left him free to follow the one purpose of his heart which still con-