

ABOVE: The family tree of the third generation of Knott light keepers at South Foreland. Henry Senior (1748-1828) had handed the baton to his son, Henry Junior (1797-1870).



Henry, Ann & Margaret

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Early 19th Century

Henry Junior becomes the third generation of Knott lighthouse keepers; Three of his sons themselves become light keepers; The Forelands are lit with oil

The Young Henry Marries

The year is 1817. All six girls had married except Elizabeth (b1783), who possibly died as a young girl. Henry Senior's eldest son, Joseph, had married Elizabeth Brown as long ago as 1799 and they had a considerable family of eight children. (See Chart 2 on p84.) Henry was approaching his 70th year and there would have been no thought of retirement. We believe he bought a cottage and a small piece of land in St. Margaret's.¹ His youngest son, and baby of the family, Henry (hereafter referred to as Henry Junior) was now twenty years old and it seemed to be a foregone conclusion that he would continue the work of his father.

It was a happy family group that gathered at the little church of St. Augustine's in East Langdon, in spite of it being 3½ miles down the road from St. Margaret's at Cliffe. It was the 7th February 1818 and it was almost Henry Knott Junior's 21st birthday. Ann Taylor, a local girl of that parish, was dressed in her very best frock, for she was to be Henry's bride. As her parents Richard and Sarah proudly looked on

they could not help but remember that she was just nineteen years old. It is a pity that I have not seen the page from the Marriage Register as it might tell us more about that occasion. Obviously I would like to know whether or not it recorded Henry's occupation. It was not mandatory between 1812 and 1837 for the registers to do so, and the transcription suggests that there is nothing there, but occasionally something extra was added and in this case it was not that Henry was a carpenter. It would also be interesting to know who witnessed the marriage. Was Henry's father or his elder brother, Joseph, there? Were they literate or were there just simple ink crosses on the page to mark their presence?

Eighteen months later their first child was born in St. Margaret's. It was a son and he was baptised Henry² on the 1st August 1819 to a father who was a 'Carpenter.' He was now the third successive generation to be named Henry and he was destined to become a light keeper in the family tradition. Then, at the end of 1820, the second son arrived. This was John, another light keeper in the making,

¹ Roberts, p11.

² Here, in later pages, we will refer to him as Henry 3.

Old Henry Writes his Will

This is a transcript of the Last Will and Testament of Henry Knott – made and witnessed on the 5th May 1823, Henry's 75th year.

In the name of God, Amen.

I, HENRY Knott, of the parish of St. Margrets at Cliff in the County of Kent, Labourer, being of sound disposing mind, memory and understanding make my last Will and Testament in manner following, that is to say I commit my soul unto its Almighty Creator and my Body to the Earth, to be decently interred in a brick grave with a Headstone, at the discretion of my executors hereafter to be named,

Goods etc. to William Loud, shopkeeper in the parish of St. Margrets in County of Kent, Stephen Tucker, bricklayer also of the said parish and Samuel Finnis, light keeper at the South Foreland in the said parish of St. Margrets upon trust, interest etc. paid either yearly or quarterly to my wife, Judith Knott free from the control of any future husband she may hereafter marry, and on her decease, household furniture, plate, jewels etc. to be sold except my wearing apparel, at the death of my wife, to be divided between my two sons, and my wife's wearing apparel to be divided between my daughters.

To my grandson, Henry Knott, son of Henry and Ann Knott, my silver watch I now wear.

To my daughter Jane, wife of William Marsh of the parish of St. Margrets, a picture found by me under the cliff in the said parish.

The remainder of my estate to be divided between my two sons and six daughters as hereafter named.

My daughter Ann, wife of Henry Finnis of the parish of East Langdon.

My daughter Susannah, wife of Stephen Hopper of the parish of Northborn.

My daughter Mary, wife of Thomas Morris of parish of the East Langdon.

My daughter Judith, wife of James Frind of the parish of Eythorne.

My daughter Sarah, wife of John Powell of the parish of St. Margrets.

Said William Loud, Stephen Tucker and Samuel Finnis, executors

5th day of May 1823.

Henry Knott – his mark.

but it was the arrival of the third child, Anne in 1822, that was a turning point in the record. Her baptism on the 8th September 1822 records the fact that Henry was now a 'Light Keeper' when in 1820, at John's baptism he had been a 'Carpenter.'

Betty Roberts was the first to attempt to unravel the Knott family story. She spoke and corresponded with people who were unknown to us at the time. Retrospectively, the lack of source evidence for her conclusions must be occasionally questioned, but they must also be recorded as a part of this story. Betty Roberts said that Henry became the Keeper at South Foreland in 1818 because his father retired when he married.³ That is a reasonable assertion. Kathleen Arnold's⁴ extraction of the Parish Registers, in about 1980, curiously records Anne Taylor at her wedding (in East Langdon) as 'Assistant Keeper of the Light House at South Foreland.' Even in a digital age, the register remains in transcript, but it is fundamental to our understanding of the family's involvement. Family folklore perpetuates the date 1821 for Henry's retirement,⁵ but as has already been said, the concept of 'retirement' did not exist at this time and men worked until they could physically work no longer.

Sometime around 1821, the great artist Joseph Mallord William Turner visited South Foreland and made a number of sketches of the lighthouses. (They are remarkably similar to those made by Durrant in 1808.) It is exciting to ponder the probability that the Knott family watched the great man as he went about his work. Maybe they wondered how it was that he had nothing better to do than make sketches! Turner **did** later make a painting of South Foreland and in true Turner style it is a wildly ethereal work entitled *The Beacon Light* with tempestuous seas and black skies.⁶ The works of both Turner and Durrant are reproduced here. (See p96-99.)

The Contents of Henry's Estate

Curiously, when Henry Senior named the three men that he wanted to carry out his wishes after his death, he chose Samuel Finnis, a man just 28 years old whom he had known for barely a year. Its inference was deferential; subservient even, but the other two men were villagers - possibly known to Henry as friends over many years - William Loud,

³ Roberts, p11.

⁴ Mrs Arnold was a volunteer local researcher in the parish. She communicated with both Roberts and ourselves.

⁵ Family reminiscence published in the Belfast Mission's magazine May 1911 - *The Light keeper* (see p60ff).

⁶ SFLCMP pp64/65 & 71.

shopkeeper and Stephen Tucker, bricklayer,

In 1821 there was a census, but it was a precursor of those we have come to value for their information. It was the third numerical census to count properties and those who lived in them. Harris tells us that there were 87 inhabited houses in the parish that provided homes to 613 people.⁷ This figure was distorted by the unusual presence of a large school for boys. Dr. James Temple's Academy housed over a hundred boys in Cliffe House in the High Street and had been expressly built for the purpose in 1820.⁸ The boys were given tokens in place of pocket money to spend in the local shop. The only shop that traditionally attracted schoolboys was a tuck shop, and William Loud was a baker with his wife Sarah. Everyone in the village would have known them.

Although it has a date that is 30 years later, the 1851 Directory for St. Margaret's carries an entry for Stephen Tucker bricklayer, one of only two tradesmen listed. The other was Joseph Knott, builder - and this must have been Henry's eldest son, who began his working life as a carpenter in the alternative family trade. Henry's Will requested that he 'be decently interred in a brick grave with headstone' and this must have been the role of Stephen Tucker to not only ensure that it happened, but to do it himself.

The few words that embrace the items that Henry wished to disperse among the family give a faint glimpse into those few things that Henry valued and to whom they should be given. The two specific bequests in the Will are of particular interest and excite the imagination.

In 1823 Henry had a large number of grandchildren for his eldest son Joseph had eight children without all those of his many married daughters. Yet it was his youngest son's firstborn, Henry, whom he singled out for special affection. The silver pocket watch was the focus of attention. I can visualise Grandfather Henry relaxing in his favourite chair with all the time in the world, whilst a small boy sprawled on his lap playing with the watch pulled from his waistcoat pocket. Henry 3 was only four years old, yet he had been made a promise that would surely be kept.

⁷ Harris Stone, p6.

⁸ Harris Stone, p13.

Another Keeper Is Found

Samuel and Ann Finnis

Henry Senior's Will reveals the name of Samuel Finnis, light keeper, to be one of those ensuring that his last wishes were enacted as an Executor, but Samuel is somewhat enigmatic and contemporary records are not helpful in uncovering his story. His parents, Thomas and Hannah, were resident in the Dover parish of St. Mary the Virgin. It was here that they married in the spring of 1793 and it was here that Samuel was baptised on the 30th April 1794 when he was just 30 days old. That made Samuel almost three years older than young Henry at the date of the Will, and in 1822 Samuel was 28 years old when they must have begun working together. So, what more is known about Samuel Finnis from Dover?

On the 18th February 1822 he married Ann Hogben in the church of St. Alfege in Greenwich. This might seem a surprising choice, but the South Foreland light was owned by Greenwich Hospital and this link suggests that Sam Finnis may have had some form of maritime link with his residence in the town. In fact I would suggest that it was in Greenwich that he gained his position as light keeper of the South Foreland light and, as we shall see, it was a position he always considered superior to that of the Knotts.

Likewise, it is curious that Henry Knott Senior's daughter Ann (b. 1774) was married to one Henry Finnis (baptised 29 June 1770 at St. Mary the Virgin, Dover - see Chart 2 p84) but he was not related to the father of Samuel, who was Thomas Hales Finnis (baptised 21 January 1770 at St. James's, Dover). But Finnis is a common name along this part of the Kent coast. These early records do not include all that we would wish to see, and the lack of any reference to an occupation is a serious omission. It was 1813 before occupations were added to the new format of the baptism register, but there were no children baptised to a light keeper until Ann Knott's baptism nearly ten years later in 1822.

It is evident that these five years from 1818-23 are critical to this story. It has already been shown that from Henry Junior's marriage in 1818 until December 1820 he was a carpenter. His transition to light keeper took place within the 20 months from January 1821 to September 1822, by which time Samuel Finnis had arrived as a 'light keeper' and had found a place on Henry Senior's Will.

So, at this point I must remind my reader that since the rebuilding of South Foreland lights in 1792-1795, which retained the use of two lights, the second keeper's name between 1792 and 1822 has never been found beyond the possibility that it was William Marsh.

And what of the picture mentioned in the Will? Now there is another curious story. How do you happen to find a picture 'under the cliff'? Had it been washed ashore, or had it been stolen and thrown over the cliff? What was the subject of the picture and who was its painter? Whatever the answers may have been, it is obvious that Jane and her husband William Marsh had attached some significance to it. They must have expressed their fondness for it and it had been promised to them. As family heirlooms with a story to tell, I wonder what happened to these items.

The reference to Judith's jewels is even more astonishing. It is difficult to imagine someone from such an ordinary background, living a domestic existence in a very poor parish, actually owning jewelry. Rings, necklaces and brooches were perhaps the most common forms of adornment, but was there any real value amongst them? 'Wearing apparel' was seemingly much more valuable for its use rather than ornament. In the event of Judith's death the jewels were to be sold, but the clothes were sacrosanct.

Looking back at the events that were about to unravel it is poignant to read of the detailed provision that Henry made for Judith's well-being after his death. In the event the opportunity was taken from her. Barely five months after the date of the Will she was being laid to rest in the churchyard of St. Margaret's. Just 70 years old, she was buried on the 9th October 1823. They had been married for 50 years and it was less than three weeks to their next anniversary. Henry would miss her.

Living With The Sea

Henry Senior's Last Will & Testament was a clear and straightforward document, and the care that is shown to his family is quite touching, but the parish registers had also become clear and straightforward when their new format was introduced in 1813. In such a small parish there were very few events recorded in each year, and as each page of the burial register was turned it was shocking to discover the number of poor souls found washed up on the beach. The first page alone shows six unknown persons who were buried in

three graves in the churchyard over the course of three weeks in the spring of 1813. The register records that they had been lost from an upturned boat, possibly from Denmark, but that amount of detail was unusual. On most occasions it was simply a person unknown washed ashore, or alternatively a body found on the beach, and the total had risen to 14 by 1820. This was the cost in human suffering inflicted on a coastal parish.

An undated paper found in the village History Society's archive reflects the care and concern of one local couple, the Powells of Street Farm, who offered to recover the bodies and lay them out in the *Green Man* on the bay for identification. That was a charitable and humanitarian act when the families of these drowned men would never see them again or know of their fate or resting place. Unfortunately the forenames of the Powells are not recorded and the name is not uncommon in the parish, but Sarah Knott (see Chart 2, p84) had married John Powell in 1808 and they were known to be farming in the parish close to the South Foreland lights in 1841.

The Lighthouse Is Put On The Map

The 'new' twin lights of South Foreland, known as the Upper and Lower Lights, had already been in service for over thirty years when one day in 1825 a stranger appeared in the parish with a strange instrument mounted on a tripod. He was not alone, for he had an assistant who went everywhere with him carrying a spiked pole. They were seen standing with their equipment, in fields, farmyards and on village tracks, and they drew curious looks from those with time to stand and watch them. Gradually the word got around that the parish council had employed a professional surveyor to map out the parish in a way that had never been done before. This was to be an accurate map, and the final result showed that it extended to more than 1,758 acres (711 hectares). Naturally all the tracks, houses and other buildings were also shown, and it is of interest to know that the 'lighthouses under Mr. Knott' feature on the large parchment that extends to 2.4 m (8 feet) by 1.2 m (4 feet) in size.

For the Knott family historian this is a very interesting phrase. Its plurality suggests that both lighthouses were in the oversight of 'Mr. Knott', but was it Knott Senior or Junior? In all probability it was Henry Junior because his father would have been 78 in the summer of 1825, yet the old adage that a man was 'once a Light Keeper, always a Light Keeper' infers that the commitment to the light

waned only with failing health. Even in his advanced years Henry Senior was always on hand to assist.

The statement also contradicts the perceived status that I have attributed to Samuel Finnis, for good reason as we shall see, but to the parishioners of St. Margaret's the lighthouses had been in the care of the Knotts as long as anyone could remember. They belonged to no one else. Finnis was an outsider, an interloper, even a stranger in their midst, especially as he had been there no more than three years at the time of the survey.

As almost all the farmland in the Parish was designated as arable land, I would suspect that this comprehensive survey took place after the harvest had been gathered and before ploughing began. This would have allowed the surveyor complete freedom to roam its fields unhindered. Meanwhile, down at the Low lighthouse, Henry Junior and Anne Knott were reaping a 'harvest' of their own. The safe arrival of their fourth child, a daughter Elizabeth, was welcomed at a baptism service in the parish church on the 30th October 1825.

Living With The Unexpected

The tower of the parish church was originally topped by four turrets, but in 1711 the one at the southwestern corner collapsed taking a large section of the tower with it. To stabilize the tower the remaining three turrets were taken down, but the tower may have remained broken for over a century. It was not until the early 1820s that work began to restore it. Two stones dated 1775 & 1822 left by the restorers are to be found within it, and one modern historian suggests that it was completed in 1827 and took on the form that we can still see today. This means that it may have been in this decrepit state throughout all of the visits to the church by the Knott family. Perhaps Joseph Knott 'builder' and Stephen Tucker, bricklayer and friend of the family, helped with its rebuilding.

The winter of 1827 was to be Henry Knott Senior's last winter. On the 15th March 1828 he was buried in the churchyard at St. Margaret's and this event refers us back to his Last Will and Testament and the 'brick grave with a headstone' that he had specifically requested for his demise. This very specific request once again brings to mind Stephen Tucker, the bricklayer named in Henry's Will, but when we stood there in 1981, we could see only one headstone in the churchyard dedicated to a Knott and it recorded the premature death of his grandson, John (30), in April 1851.



ABOVE: The tower of the church of St. Margaret of Antioch originally had four turrets on its corners, but after storm damage in 1711, these were removed for safety reasons. This engraving illustrates the state in which the tower may have remained until around 1827 when, local historians suggest, it was restored to its present state. The original source of the engraving is unknown.

Churchyards are notoriously unpredictable, and so are the weathering qualities of the headstones. Some survive – many do not. Yet always we are ‘at the discretion’ of others. When the final count was made, the family may not have been able to afford such a grand resting place for Henry Knott from the second generation of keepers at the South Foreland Lighthouse. It was a long life that ended six months short of his 80th birthday. It had been a life devoted almost entirely to one lighthouse, a task that was now in the care of his youngest son, Henry Junior. Life was moving on and changes were looming that would catch an honest light keeper unawares.

Trinity House Makes Its Mark

L 828 had been yet another year of ups and downs in the family. If it had begun on a sombre note with the loss of Henry Senior, then it ended with the sound of laughter. George Knott was born on

Sunday 23rd November and a month later, just four days before Christmas Day, he was baptised at the fifth ceremony to be enjoyed by the family at the parish church. The four children, dressed in their Sunday-best, were already thoroughly used to the windswept walk along the lighthouse track to the village, although the youngest was still only three. I wonder if they were home before dark on this the shortest day of the year?

I cannot imagine that Henry Junior, who like his father could not read or write, would have concerned himself with the politics of lighthouse management and the difficulties experienced by the local agents in collecting the lighthouse dues in the neighbouring harbours. However, difficulties there were, and minds were focused upon their resolution. The Elder Brethren at Trinity House had been in discussion with the Greenwich Hospital Trustees on the question of ownership of the lights at both the South and North Foreland, and between

them they had agreed the terms of a transfer of ownership. Trinity House became the new owner in 1832 for a modest sum - a little over £8,000 - but they had to agree to slash their dues by 75%!

1832 was also an eventful year for Henry. In September Ann gave birth to their sixth child, a daughter named Mary Ann, and yet another visit to St. Margaret's Church for a baptism was called for on Sunday 16th September. This daughter, 48 years later was the widow of Richard Arnold, and would tell the Census Enumerator that she had been born in the 'South Foreland Lighthouse.' In so doing was the first Knott child to 'give the game away' and to provide welcome, conclusive evidence of the family's occupancy in that pre-Trinity House period.

Sadly, Ann Knott didn't see her latest daughter walk, for in a little over six months she was dead. There are no 'family stories' to explain her premature death at the age of 34. She had given birth to six children in twelve years, but then that was considered quite normal. Perhaps the life on a lighthouse with its relentless night-time watches, together with the demands of young children, was just too much for her. Perhaps it had been a bad winter. Perhaps she was just not strong enough. Whatever the reason or the cause, as Henry stood by the graveside in the churchyard of St. Margaret's on Saturday 6th April 1833, he could not ignore the reality of his circumstances. There were now six young children without a mother. Henry had lost his wife **and** his housekeeper. Something would have to be done.

There is a curious record that Henry wrote to Trinity House suggesting that his eldest son of 15 (Henry 3) was capable of taking his mother's part of the duty. Trinity House gave it their attention and considered that Knott was a very sober and industrious man so the lighthouse would remain in his charge. The inference was that Henry Knott could have lost his job as a result of his wife's death.

Thick fog blanketed the coastline as one of His Majesty's brigs named *Serpent* gingerly groped her way home to Sheerness from the Mediterranean on Monday 27th May 1833. Her Master had the unenviable responsibility of navigating her through the gloom knowing that the Goodwin Sands were somewhere ahead. The crew strained their ears for the sound of the lightship's bell, but instead heard and felt the grinding jolt as she ran ashore between St. Margaret's Bay and Old Stairs Bay. She was pulled off again without too much difficulty with only superficial damage, but inevitably there would be a Court Martial. Captain Symonds appeared before

the Court led by the Port Admiral of Sheerness four days later, and after two days of 'patient evidence' he was exonerated. The same could not be said of his unnamed civilian Master who was severely reprimanded and 'told to be more cautious in future.' This seems to merely to highlight the vindictiveness of the class system of the day. What it didn't allow for was the thick fog that plagued that coast and the presence of Trinity House in two nearby locations that could do nothing to prevent the officers from running ashore. It was a story as old as time.

In 1834, Trinity House agreed to a request from Michael Donovan, Professor of Chemistry at Dublin University, to install and trial an invention he called 'Naphtha Light.' A newspaper reported the trial as follows:

"Within the last three months an additional brilliancy has been obtained with the lights at South Foreland by the combination of a spirit or some other property of tar with the oil consumed in the burners. The improvement, however, requires that a degree of caution should be exercised during the combustion as was proved by the following accident.

"On Monday evening (15th June), while the Superintendent of the Lower Station was making his inspection of the illumination chamber, an expansion of flame took place similar to that of an explosion of ignited gas. Its cause is uncertain and may have been due to the draught caused by the opening of the wicket door into the compartment, but its effect was the demolition of 26 large plate glass reflectors and the Superintendent, whose name was Knott, was so seriously burnt as to require medical attendance."⁹

This incident may have influenced Trinity House to decide against continuing with the trial, but papers lodged in the London Metropolitan Archive suggest that the keeper named Knott was John. However, John was just 15 years old and although he very probably assisted his father, he would not be referred to as the 'Superintendent.' This was reserved for Henry Knott who is known to have preferred the Lower Light probably because of its larger accommodation (as shown in the illustrations by Durrant, see p96-97). We cannot ignore the possibility that if John suffered from such an accident it may have contributed to his early death.

Throughout this narrative I have pointed out at intervals that, before the censuses, it was never certain how many light keepers were employed at a

⁹ *Dover Telegraph*, June 1835.

lighthouse. The logic and the assumption that arises from it, is that there were two on each light, but this is difficult to confirm. Certainly from 1820 onwards Samuel Finnis and Henry Knott were keeping the Upper and Lower Lights respectively, but if they were alone, how did they keep the watch system decreed by Trinity House?

A death announcement in the *Dover Telegraph* in March 1835 provided an unexpected clue. It said;

“Last week at Wanston Farm, aged 70, the wife of Francis Marsh formerly light-house keeper at the South Foreland [died].”

There was no date and neither did it name her, but this was Sarah Marsh and Wanston Farm was the nearest neighbour to the lighthouses. She was buried in the parish churchyard on the 4th March 1835. Her husband was still alive, but he was buried with his wife on the 6th June 1836, probably aged 79 years. Francis Marsh and Sarah Gillett both came from St. Margaret’s at Cliffe, and they married on the 27th February 1788. Francis could have been one of the keepers, previously unknown, from the 1790-1820 period. Indeed there is a record of only one child, Ann, born on the 29th March 1796, and as a consequence of this modest family they may have occupied the lean-to at the Upper Light before Samuel Finnis eventually took his place around 1822 when Marsh was 65 years old.

In 1836 the ownership of the South Foreland lighthouses was in the hands of Trinity House of Deptford. The Knotts, no doubt, had been issued with their smart new uniforms and they carried on with their task as they had always done. However ten lighthouses remained in private ownership and were an ever increasing problem to Trinity House, who found it necessary to petition Parliament for an Act which would authorize the compulsory purchase of these lights. At the heart of the problem was the growing number of complaints from ship owners concerning the payment system which demanded that a charge was made on a ship for every light it passed. In addition to this financial burden, the rates demanded by the lighthouse owners varied considerably from light to light. However, the complaints were not all from the ship owners. The lighthouse owners were being taxed by the Customs Department at 20% on all dues collected by their Agents. In a word, it was a mess.

In 1834, a Parliamentary Select Committee had been set up to enquire into the management of the private lighthouses and the charges that they were authorized to collect. As a consequence, the



ABOVE: Henry Knott (1797-1870) photographed in 1867 in his light keeper’s uniform when, we believe, he celebrated his 70th birthday. The photo is one of the earliest known of a Trinity House light keeper in uniform. The phased, gradual introduction of uniform from 1832 onwards represented a move away from family-run lighthouses to a more professional career structure in which keepers moved from one station to another, taking their families with them. This was not the case for Henry who spent his entire life at South Foreland, much of it in the living quarters at the Low Light.

Chairman of the Committee was persuaded that private or leased ownership of lighthouses should be abolished. In 1836, an Act of Parliament made **all** the lighthouses of England and Wales the sole responsibility of the Trinity House of Deptford and the first two to pass into their control were the Longships and Dungeness. The last and the most difficult light to acquire was the Skerries and I will come back to that situation a little later (see p259).

As the Master and Elder Brethren settled into their first full winter of 1836/37 and began to take stock of the lighting equipment that they had inherited, the Trinity House management was forcibly reminded of the purpose of the South Foreland Light. On Wednesday 23rd November the Dover Strait was hit by the most violent storm in living memory and 30 vessels were lost upon the

treacherous Goodwin Sands. Within three days the storm returned with such intensity that it did not abate until the following Tuesday 29th November 1836. It was a storm that literally shook the seafaring community afloat and ashore. Henry Knott and his colleague Samuel Finnis must have shared an enormous burden of sadness concerning the heavy loss of life, but they could do no more than keep their light bright and steady. It was a miracle that the lighthouse structure had not been severely damaged at its exposed and windswept location. Yet, it may have been that storm that led to the decision to rebuild and refit the lighthouse at South Foreland with the most modern equipment available.

James Walker, the Chief Engineer at Trinity House (see p115), must have visited South Foreland after he had been instructed to prepare plans for the rebuilding of the lighthouses, but they were not rebuilt in the strict definition of that term. They were new structures. He was an impressive and energetic man who had been born in Falkirk, Scotland and was now nearly 60 years old. Yet he had recently built a new lighthouse at Start Point in Devon (1836) and had almost finished a new light on the formidable Wolf Rock (1835-40) whilst at the same time he had completed Aberdeen Harbour (1838) and was overseeing the building of the Caledonian Canal (1838-48). So, for a man who was President of the Institute of Civil Engineers (1834-45), he probably barely noticed Henry Knott as he paced out the site and viewed it from every conceivable position, whilst making hurried notes and sketches to be interpreted at a later date by the draughtsman who would have the task of working out the fine detail.

Or, perhaps they talked in depth about all sorts of things ...

The Census Enumerator Calls At Every House

It was while they were working on these plans that Britain's first National Census took place on the night of 6/7th June 1841. The person given responsibility for collecting the information was officially known as the Enumerator. He visited 117 houses in St. Margaret's at Cliffe and recorded the names of 748 people, but unfortunately he ignored the names of the farms and cottages in which they lived, preferring only to name the two large schools. Even the lighthouse and the two public houses were anonymous. Of course, it is likely that the cottages were unnamed, for formal 'addresses' such as we all

have today were not essential then: everyone knew everyone else. But the lack of addresses makes it difficult for us to track the Enumerator on his walk around the area. However, the final record is very clear on one point. There were two lighthouses and they must have been quite different from the structures that James Walker had in mind and which would be plainly seen in the record twenty years later. In 1841 the Knott family was confined to one house, Samuel Finnis was to be found in a different part of the site, and these were the structures that dated from around 1793/5.

The Enumerator appears to have begun his walk in the village as there is a builder, a tailor and three shoemakers on the first two pages, but he then descended the hill to St. Margaret's Bay. Here he found John Hatch, the Chief Officer of the Coastguard and his ten men with their families. He paused to note that Henry Taylor was the publican (of the *Green Man*) before he began his climb from the beach. He passed two small cottages before he encountered Henry Knott's family at the lighthouse, although he makes no reference to it. Some distance further on he recorded another light keeper, Samuel Finnis, living next to two farmers – James Friend and John Powell - who were each married to one of Henry Knott's sisters – Judith and Sarah. However, just before reaching the boys school he discovered the third of the Knott sisters, Jane, with her agricultural labourer husband William Marsh and three of their children.

Cliffe House was an enormous school and disproportionately large for the size of the parish. It was said that it had been founded in 1820 by Dr. James Temple, but how does that equate with its present 'Schoolmaster' of the same name who was only 35 years old. However, there was another James Temple in the parish, from an older generation at 60 years old and was described as a 'Farmer,' but could he have been the Founder? The school was filled with 110 boys aged between 9 and 17 and staffed by six young men aged between 21 and 35 described as teachers. There were also six female servants aged between 18 and 25. These were the only people who had come from the local area, and among them were two names with family associations. Ann Dixon and Sarah Hopper were both aged 18 and may have been distantly related to the Knotts by marriage. Next door to Cliffe House was Marine House, a school for 22 girls aged between 10 and 18 and led by Susannah Eaton, a 31-year-old Governess. She was supported by three teachers aged from 17 to 25 and two domestic servants.

As the Enumerator left these two large establishments the first cottage he came to contained the family of Joseph Knott who was the oldest member of the family resident in the parish, with Elizabeth, his wife. This record confirms that Joseph was a Joiner and Carpenter, a trade he shared with three others in the village. Charles Arnold was 60 years-old like Joseph, but the other two were in their thirties. Sam Farrier was one and it appears that Sam's father John was the local thatcher, but the other was William Knott and at 39 years-old he was probably Joseph's eldest surviving son.

Although it would seem that the Enumerator was now back in the main residential area, it still has the appearance of a rural community. There are eleven farmers supported by countless agricultural labourers and two 'shipphards' as they were called, suggesting, as we have seen earlier, that the windswept uplands were well populated with sheep. However no community was complete without a blacksmith and St. Margaret's had two, both 30 years-old! One was Redman Goldsack. Another person essential to the community was the carrier, Thomas Goldsack who, with his wife, Anne, had six children still living at home. One of them, 14-year-old Catherine, would marry George Knott before the end of the decade. Another daughter, Matilda would marry John Knott within two years, and was a servant at the public house which was in the care of John Goldsack (60). So, although the name Goldsack was fairly common in Kent (172), and more than half of those resided in the Dover District (94), it is a name that immediately leads to the question – are they related and where were they from? It has been said (but difficult to prove) that the name was unknown beyond the borders of Kent in the 18th Century.

A Question Of Ownership

The first census did nothing to identify which light was occupied by which family, but it can be done by applying logic to the census Enumerator's visits. He must have reached the eastern or Lower Light first where the Knotts were living. Yet the Knotts always seemed to have the larger family, and it is clear from Durrant's sketches that the Low Light had the larger accommodation. In 1841 the Knotts were a family of six, whilst Samuel Finnis's family was only three, so how was it decided who should have which light?

Also unclear is the question of assistance to the light keeper. In the days of two brazier fires there

were only two keepers and this seemed to roll over into the new lights of 1795. In the early 1820s when Samuel Finnis arrived there was the suggestion that Henry Knott's new wife Ann was his assistant, but that might just have been due to willing help for her husband, not an employee of the Greenwich Hospital Trust. This situation was repeated in 1841 when young Henry Knott, claimed to be his father's assistant. Was he paid by Trinity House or just an unpaid helper? We just don't know. However, on the 3rd May 1841 – just five weeks before the census – Ann Finnis died after a long and painful illness. A week later on Monday 10th May, she was buried in the churchyard at St. Margaret's at Cliffe. So, when the Enumerator recorded just three people at the High Light, the two women were almost certainly Samuel's mother Hannah and his sister Elizabeth Garrett Finnis (24) who had been baptised in Dover's St. Mary the Virgin on the 12th February 1817. Samuel's father, Thomas Hales Finnis, a Customs Officer, was already over 50 when she was born and he had been buried in the churchyard of St. James' Dover on the 3rd December 1828 aged 62.

Samuel Finnis, who had been born on the 10th April 1794, was 47 years old in 1841 (the census records 45 as 'rounded down'). However, the most important piece of information was revealed in Ann's death announcement when it was said that she had died 'at the Upper Lighthouse.' But it went further as Samuel Finnis began to refer to himself as 'the Principal Keeper' underpinning his claim to the larger, Upper Lighthouse. Perhaps Samuel Finnis had gained or been given a superior impression of his status at the light, for it is also clear that he was not working with an assistant. The Knotts guardianship of the smaller Low Light was probably gained from three generations of duty already given. Their claim was based upon longevity and continuity, but Trinity House had its own plan for the future of young Henry Knott and it wasn't at South Foreland.

The Keepers Face A Decade Of Upheaval

It had been almost fifty years since the two lighthouses had replaced the very basic open coal braziers. This decade would be marked by the total renewal of both Upper and Lower Lights and this could not have been achieved without considerable disruption to both the Finnis and Knott families. This brings us to the question once again concerning the building of new lights whilst keeping the old ones functioning. It was not just a question of

structure and lamps, but of the ground on which they were built. The new one must not obstruct the old one, and with the Lower Light it was always very close to the edge of the cliff. This was a decision for James Walker, the Engineer. Each light was replaced in turn, but which was first and when did the work begin?

The *South Eastern Gazette* carried the answer:

*“The original tower, which was among the first erected in England, is now in the process of demolition, being already almost levelled to the foundation. This tower is said to have been built in the reign of Charles II. The original light was coals burnt upon the flat roof of the old tower, which was supplanted in 1793 when the modern one was built for 15 oil lamps. There is also a lower lighthouse to enable the mariner, when in times of danger, to keep the two lights in line and therefore avoid the Goodwin Sands. The object of the Trinity House in taking down the venerable tower is to adopt a similar light to the one on the opposite coast at Cape Grinez which is found to answer better and more powerfully than those already in use [at South Foreland].”*¹⁰

The ‘modern’ light would be retained whilst work proceeded, but the new light must not obstruct it so it must have been built to one side. Perhaps the obvious thing to do was to make use of the site where the old beacon had stood as a foundation for the new building. And, of course, attached to the old tower was the lean-to cottage which had probably been abandoned when Trinity House bought the old cottage built by the Greenwich Hospital Agent. The decade had begun badly with Samuel Finnis losing his wife Ann in May. Now he had to cope with builders. Perhaps it was a welcome distraction.

The contract was awarded to Messrs Denn & Bushell of Walmer and the structure was completed in its basic, unrendered form in March 1842, but it was only the light tower. There were no dwellings. The weather had been particularly bad over the period of construction and a caisson which had been built in Deal for use on the Goodwin Sands could not be floated from its yard and taken to its position due to frequent adverse weather. A second contract was awarded to H. P. MacKenzie of Dover on condition that it was completed within 20 weeks, and this seems to have been done by November 1842 when Trinity House began making enquiries about the fitting and adjustment of the optic.

During this upheaval Henry Knott lost his eldest son Henry 3, not to the churchyard, but to Bridlington in Yorkshire. His claim to be an Assistant Light keeper was now based upon being an **employee** of Trinity House, for they sent him to Flamborough Head. Perhaps unsurprisingly a young man in new surroundings soon found attractive female company, and, allowing for a short period of courtship, Henry Knott married Ann Monkman in Bridlington on the 21st July 1843. Ann had been baptised to an agricultural labourer named James Monkman and his wife Ann, and they lived in Burton Agnes near Bridlington. Henry 3 is recorded as the Principal Keeper at Flamborough Head in 1851, although only 31 years of age, and his full story can be read shortly (see p120). His departure left his father, Henry 2, short-handed and this may have persuaded his next son, John, to take up formal employment with Trinity House. I believe he completed his carpenter’s apprenticeship during 1842/43 and was been free to join his father as his assistant when the new light had finally been commissioned. However, South Foreland had always attracted the attention of many people for different reasons and the building of a new lighthouse did not fail to bring its own curious visitors.

Walmer Castle is five miles eastward of the South Foreland Light. Every year its Lord Warden, the illustrious Duke of Wellington, would take up residence at the end of August until mid-November, but he did not come for a rest. He was insatiably interested in public works, especially if they related to a nautical or military function. Inevitably a new lighthouse attracted his attention. On Saturday 3rd September 1842, in spite of being 72 years old, he set off from Walmer to ride across the clifftops to inspect the work with only a single attendant for company.

Henry Pain MacKenzie was still an unmarried man at 36 (b. 1806/7) living in Caroline Place, St. Mary’s, Dover with his widowed mother and a spinster sister, but he was also a builder of some local reputation and he had the contract to complete the new Upper Light at South Foreland. It was MacKenzie that the Duke met and their meeting was recorded in these words:

¹⁰ *South Eastern Gazette*, October 19, 1841.



“Are you the Superintendent of these works?”

“No, your Grace. I am the builder.”

“What is your name?”

“Mr. MacKenzie. MacKenzie”

“MacKenzie – MacKenzie! You are from Dover, are you not?”

“Yes, your Grace. I had the honour of building the pavilion in which you dined 3 years ago.”

“Indeed – and a magnificent building it was.”

The Duke then asked to see the drawings of the structure and studied them in some detail before being shown around the work that had been achieved. His visit lasted half an hour, after which the Duke expressed his pleasure and great satisfaction with what he had seen. Indeed, he was so impressed that he returned on the following Wednesday in the company of the Marchioness of Duoro insisting that she should see this magnificent structure. I wonder if he was wearing those boots that are still to be seen in Walmer Castle.

Sometime during the week beginning Monday the 13th March 1843, just as the work on the Upper Light was drawing to a conclusion, there was a massive cliff fall ‘under the South Foreland Meadow.’ Only a glimpse of the Tithe Map would reveal how close this was to the Lower Light, but the fall was significant, estimated to constitute 2,000 tons of chalk. With chalk being lighter than sandstone or granite this must have been an enormous volume of material, and it was fortunate that there was no one near the spot at the time. The Knotts at the Lower Light must have heard this massive fall, and I would be surprised if someone didn’t feel a twinge of anxiety, but there is no indication of the time of

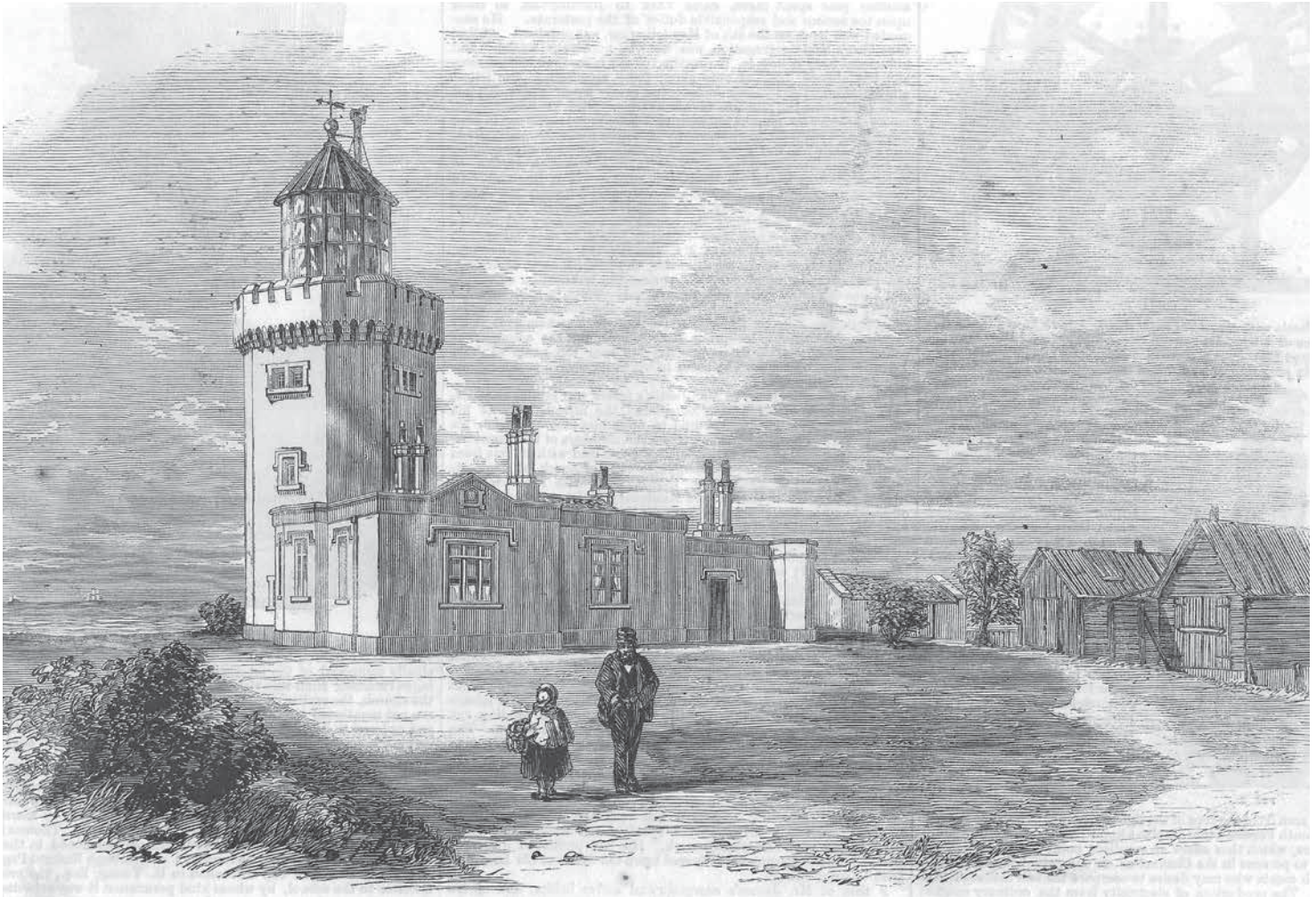
day or the state of the tide. It is even doubtful that they could see its result without taking the long trek down to the bay, but curiosity is a hard task master and I feel sure someone made that journey.

All the building work had been completed at the insistence of Trinity House by mid-November who recorded at their Board Meeting of the 15th November that the lenses would be supplied by a French firm in Paris. Monsieur Lefevre, described as a ‘mechanic’ travelled from Paris to undertake fitting the new frame, reflectors, mirrors and other parts of the apparatus, which was completed by mid-April 1843. It transpired that the completed design of the lantern used vertical and horizontal glazing bars and this led to a considerable debate among mariners and contemporary lighthouse engineers concerning its efficacy. Stevenson favoured diagonal bars for his Scottish lights and eventually South Foreland was remodelled in this way. The single, four-wick Argand lamp in the 1843 tower initially burnt whale (sperm) oil, but from March 1847 colza oil was used for the first time, which was very considerably cheaper to buy than the whale oil originally used.

On the evening of Tuesday 9th May 1843, eight weeks following the cliff fall, the new light was brought into operation and there were two fresh, new houses just waiting to be occupied by its keepers, Samuel Finnis as its Principal and John Knott as his assistant. On the following Friday night the Deputy Master of Trinity House and several Elder Brethren took their yacht *Vestal* out of Dover Harbour to view the new light in operation from a number of different positions. They were pleased with the brilliancy and utility of the light, as well as the improvements generally effected on this important headland.

Messrs Wilkins & Son were now directed to “... take down the lighting apparatus and lantern from the South Foreland Old High Light House,” and MacKenzie, “to remove the said old tower [and] the adjoining buildings.” Thereafter, Trinity House ordered “... the remainder of the buildings and the enclosure wall to be constructed,” and the road to the lighthouse, improved. The buildings may well have included the stable in the west corner of the enclosure.

Samuel Finnis settled into his new living accommodation with his widowed mother and his sister as housekeeper. John Knott grasped the opportunity to marry his sweetheart from the village, Matilda Goldsack. They were wed in the parish church at St. Margaret’s at Cliffe on Thursday 10th August 1843, the same church in which Matilda



ABOVE: A mid-19th century engraving of the high lighthouse. Note the timber sheds on the right. The view is from the east entrance gate and today, there are newer buildings at this place on the site.

had been baptised to Thomas Goldsack and Anne on Sunday 24th August 1817.

The New Lighthouses Arise, But Life Carries On

With John Knott and Matilda settled into their new house, John's father began to see the benefit of bringing someone into his life to share in his good fortune and to keep house for him. He too had someone in mind. It was Margaret Kingsford Arnold. She had been baptised in the parish church of Ringwould on the 14th May 1813 to John Arnold and Sarah, but had remained unmarried – until now. She took Henry Knott Junior as her husband on Thursday 8th August 1844 in the parish church of St. Margaret's at Cliffe and she was sixteen years younger than her husband. A bevy of Arnolds witnessed the ceremony, including Sarah Goldsack, but it is odd that Henry described his father as 'mariner.' Was this some local perception of the role of a light keeper – or was there another reason?

In 1845, as work was progressing on the rebuilding of the Lower Light, Samuel's mother Hannah Finnis died on the 7th June at the residence of her son, the Upper South Foreland Light, but she was not buried at St. Margaret's. The Curate of St. James's, Dover laid Hannah to rest with her husband on Saturday 13th June 1845. She was 72.

George Knott passed his eighteenth birthday in November 1846 and was courting Catherine Goldsack, the younger sister of his brother John's wife, Matilda. George was already familiar with the lighthouse routines and the equipment they contained, and assisted with the work whenever he was needed. This was now officially a 'three man station' in 1846, those three men being his father, Henry Junior, his brother, John, and Samuel Finnis. If he joined Trinity House too quickly he ran the risk of being sent to another station and he didn't want that; in fact he was unsure what to do, until something unexpected happened to provide a solution to the dilemma.

The New Lighthouses Attract Attention

One of the most prestigious publications of the mid-19th century was the *Illustrated London News* simply because it depicted Great Britain's achievements and events with fine etchings as they made the news. The building of the South Foreland Lighthouses didn't appear in their publication until 17 October 1846 and may suggest that it was the completion of both lights that attracted editorial prominence.

However the fine etching that is normally the hallmark of their pages falls rather short in the illustration that was published. There are a number of features that mark it out as being the new Upper Light and these include its octagonal shape and castellated gallery above three floors, but also notice the two small triangular features on the ends of the living quarters. However, the drawing is a disappointment and a far cry from other attempts.

The same attention to detail relating to the builders, costs and dates does not attend the construction of the new Low Light beyond the fact that it was underway by December 1846 and possibly completed on the 6th of that month when it was reported that "the lamps [burned] extremely well." Both lighthouses are visible in an 1847 water colour which shows the Trinity House steam ship *Vestal*, built in 1835, passing South Foreland, whilst the enclosure boundary wall was completed in the summer of 1848.

James Walker must have been satisfied with the finished structures as they are aesthetically very pleasing to the eye and had cost the Elder Brethren just £4,409 – 4s – 3d. Each light had two houses symmetrically arranged on either side of an octagonal tower that boasted a castellated balcony to mimic its grand neighbour – Dover Castle. The High Light had three floors rising to 69 feet (21 m) with the lamp being 374 feet (114 m) above the mean high water mark. The Low Light was exactly similar except for its two storey tower whose height reached to 49 feet (15 m). It was 385 yards (352 m) east of the main light, but on a very exposed and precarious position close to the cliff top.

News of the completion of the lights took a long time to reach London's *Morning Post*. The report is reproduced in the box on the right.^{11 12}

¹¹ From the contemporary *Canterbury Journal*.

¹² *Morning Post*, Thursday 20th July 1848, p8.

The South Foreland Lighthouses'

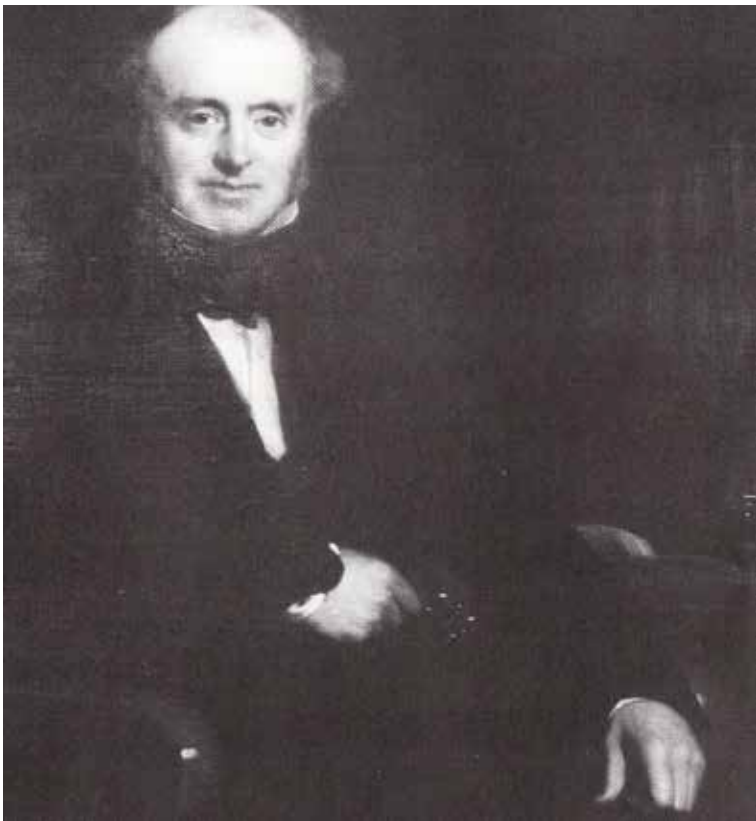
These new edifices are now completed and from their beauty and unique appearance reflect the greatest credit on all parties concerned. There are two – the one called the Upper and the other the Lower South Foreland Lighthouse. The headland on which they stand is the nearest point in England to the coast of France, being barely a distance of twenty one miles across the Channel.

The upper lighthouse consists of a massive tower (externally octagonal, internally circular), the lantern of which is about 375 feet above high water mark, leaving a perpendicular height of the cliff on which it is situated of about 290 feet. The lantern is constructed on a novel principle. It is furnished with 264 mirrors which are enclosed on the side opposite the sea by six lenses. These mirrors, casting a multitudinous reflection on each other, afford a strong and brilliant light, being clearly visible on the opposite coast, throughout the Downs, Ramsgate and even Margate and the greatest portion of the Isle of Thanet. The lamp, which is in the centre of the lantern, consists of one large socket containing four burners; and it supplies itself with oil by means of a kind of clockwork machinery which, while it pumps up the oil to the wick, also returns the surplus quantity to the reservoir; and in case of any defect or want of supply, by a small hydraulic balance (that) strikes a sharp tinkling bell as a warning to the keeper. The machinery is very simple and at the same time curious. The lantern consists of a cupola, the roofs and sides of which are composed of neatly wrought iron frames, apparently light, but sufficiently strong to stand against the most ordinarily violent tempest. It is enclosed by 48 oblong panes of glass, from two and a half feet to four feet long.

Around the cupola, on the outside, is a balcony rendered safe by a castellated parapet, from which, in clear weather, one of the most splendid views is to be obtained; giving scope to the eye a considerable distance beyond the bare outline of the opposite coast, and far both up and down the Channel.

Passing from the Upper Lighthouse about a quarter of a mile easterly, is the lower one standing on the verge of the cliff. The tower is not so high as the former and neither is it lighted on the same principle.

Within the lantern are suspended from copper branches 15 Argand lamps, each having a burner of rather large dimensions with a concave reflector of the greatest brilliancy and about twenty inches in diameter. It appears that it is yet a matter of doubt which system of lighting is preferable, but the Honorable Corporation of Trinity is giving each a fair trial. The framework and exterior of the lantern are about the same as at the upper light, this also having a balcony from which an extensive view can be obtained. ♦



ABOVE: Consulting Engineer James Walker (1781-1862 who, designed the new lighthouses built on the North and South Forelands during the years 1841-42.

James Walker¹³

Those of us with an interest in lighthouses soon become familiar with the name of James Walker. Born in Falkirk in 1781, James Walker completed his studies at Glasgow University and went to London to take up work in the engineering office of his uncle where he gained a thorough knowledge and experience in the general engineering challenges of the day: docks, bridges and railways. By 1823 he was well established as James Walker of Limehouse and was a member of the Institution of Civil Engineers, the leading professional body of the time. (He later became its President, succeeding Thomas Telford, and serving from 1834 to 1845.) As his business grew he took on a second partner, Alfred Burges in 1829, by which time the company was beginning to establish a reputation for building lighthouses, although this was but a small part of his business which shifted away from railways towards marine and river projects.

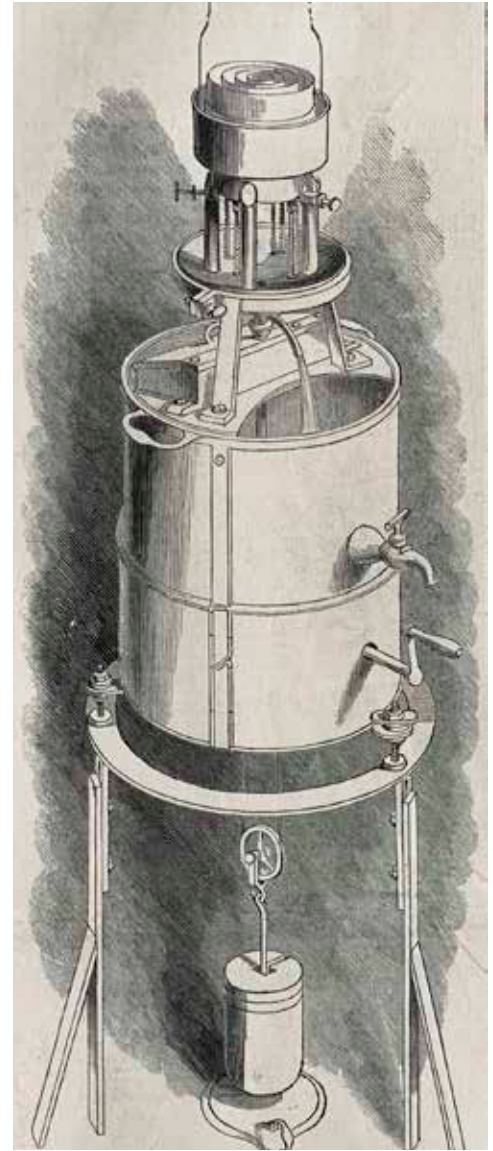
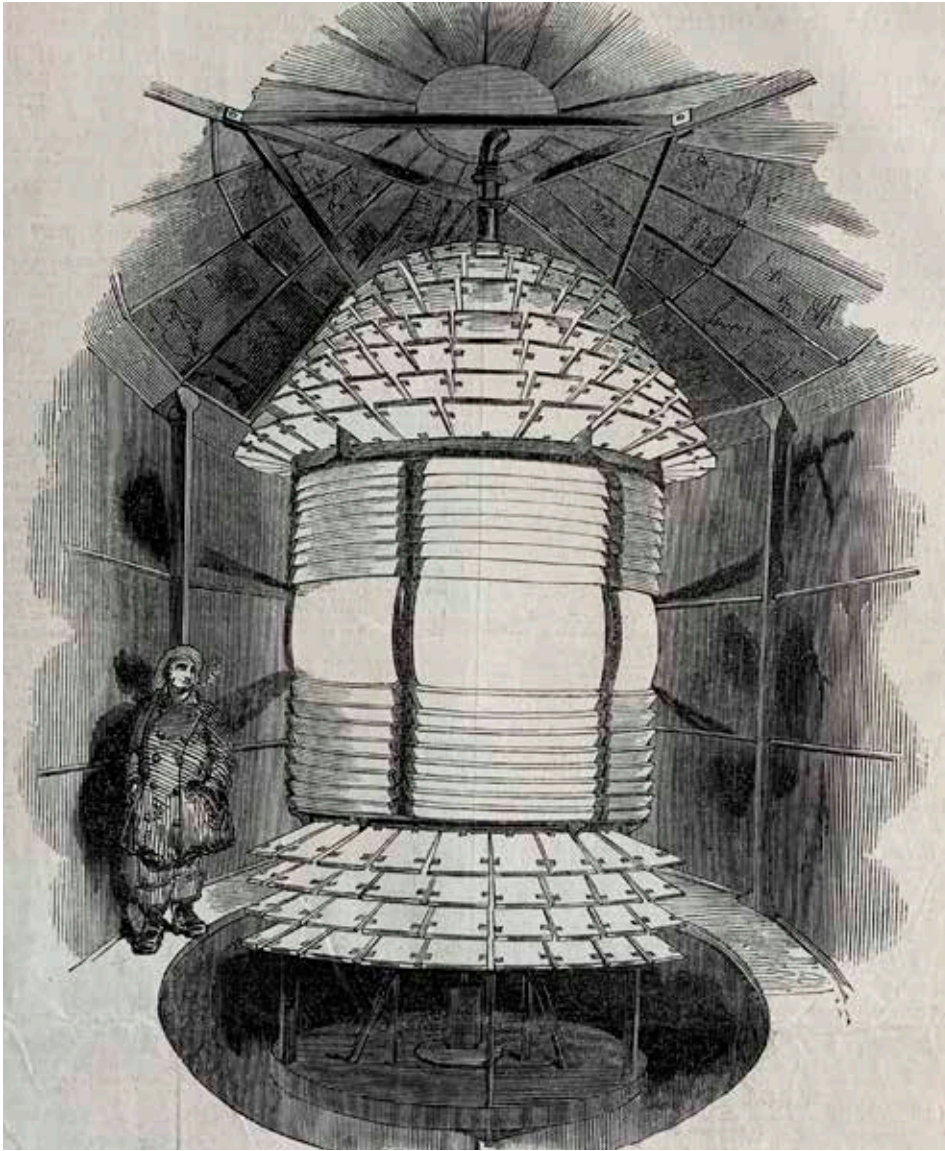
When Thomas Telford died in 1834, Walker's business took on many of his unfinished projects and became one of the top engineering firms in the country. Establishing a reputation as a "cradle for engineers", the partnership expanded again to become Walker, Burges & Cooper when a further colleague was added to the list of partners. As the Elder Brethren of Trinity House, in parallel, expanded its activities in what had become the golden age of lighthouse construction, it was to James Walker that they turned for advice. Over his lifetime, Walker was involved with the design of twenty-seven lighthouses, starting at West Usk in 1821.¹⁴ (See Table 2.) At the end of his career, Walker won a contract to build two piers, each with a lighthouse, at Tynemouth. Although the foundation stones for the piers were laid in 1854, the lighthouses were not lit until 1895. Walker was an active, practising engineer for over 60 years, right up to his death in 1862 aged 81, an event that left the way clear for Sir James Douglass to establish his business as the leading lighthouse engineers for the remainder of the century. Nicholas, James and William Douglass were already very familiar with Walker's work on the Bishop Rock and the Wolf Rock and were ideally placed to continue Walker's legacy. For Walker, the work for new lighthouses on the Forelands was simple in comparison.

<i>West Usk</i>	1821
<i>Belle Toute</i>	1834
<i>St Anthony Head</i>	1835
<i>Start Point</i>	1836
<i>Trwyn-Du</i>	1837
<i>South Bishop</i>	1839
<i>North Foreland</i>	1840
<i>St Catherines</i>	1840
<i>Coquet</i>	1841
<i>Maplin</i>	1841
<i>South Foreland high</i>	1842
<i>South Foreland Low</i>	1842
<i>Plymouth Breakwater</i>	1844
<i>Skerries</i>	1846
<i>Trevose Head</i>	1847
<i>Gunfleet</i>	1850
<i>Chapman</i>	1851
<i>Bishop Rock 1</i>	1851
<i>Bishop Rock 2</i>	1852
<i>Whitby South</i>	1857
<i>Whitby North</i>	1858
<i>Needles</i>	1859
<i>Godrevy</i>	1859
<i>Wolf Rock</i>	1861
<i>Smalls</i>	1861
<i>Tynemouth South</i>	1896
<i>Tynemouth North</i>	1903

Table 2: James Walker's Lighthouses

¹³ *Grace's Guide to British Industrial History*; https://www.gracesguide.co.uk/James_Walker

¹⁴ Hague & Christie, p229.



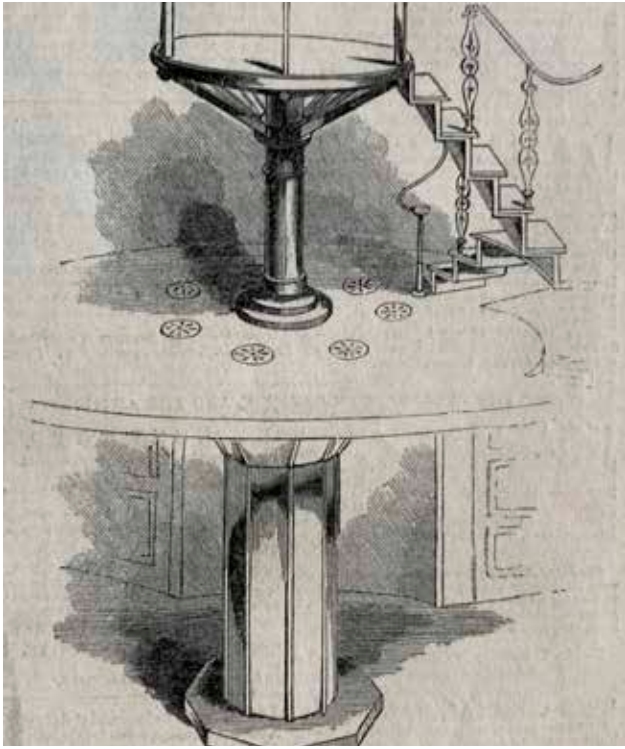
A Detailed Report From Inside the New High Lighthouse

It was not until 1846 when, seemingly inspired by several significant losses of ships at sea, a national publication reported in some detail the way the new South Foreland lighthouse had advanced the technology of lighting. It proved to be a rare description in today's pharology archives.

"The melancholy loss of the Great Liverpool off Cape Finisterre, and the practice which now so generally prevails among naval commanders of "hugging the land," has given a lively interest to the subject of a cheap and efficient lighthouse service all over the world. Two years since an East Indiaman, laden with precious freight, and still more "precious souls," went down on the sands of Etable, and perished in sight of home. A light would have saved her! Since that time hundreds of vessels

have, in like manner, found a watery grave, for want of the friendly beacons which it should be the first duty of governments to provide. Again the knell of darkness peals upon the ear. A splendid steamer, pursuing its homeward course from Alexandria, has just been lost on the inhospitable shores of Spain. And a light, too, would have saved her! Yes, a ray of those floods of light which are nicely wasted in the luxurious saloons of Madrid, would have made Cape Finisterre a guide through the "shadows of death," and have spared three hopeful females from suffocation in the friendless seas.

"With these remarks we proceed to introduce our readers to a series of illustrations of the new lighthouse system, which has been so successfully introduced on the South Foreland of England. On that bold premonitory a light has been established of a new and beautiful description, which surpasses all others for brilliancy and cheapness. It consists of an oil lamp placed in the centre of a dioptric apparatus



The contents of this report from 1846 are reproduced here because they represent a unique description of what was, at the time, a state-of-the-art installation in a lighthouse.

FACING PAGE - LEFT: The optic was very advanced, designed in France and called holophotal - a term that means that all of the light is collected - none is wasted. The central panels of glass lenses and prisms were supplemented by arrays of plane mirrors above and below. The design was derived from the innovative work of the French engineer Augustin Fresnel who installed the first optic of its kind in Cordouan lighthouse in 1823 (see p171). For a time, French designs led the world and Trinity House ordered an apparatus for the new South Foreland, installed in 1843.

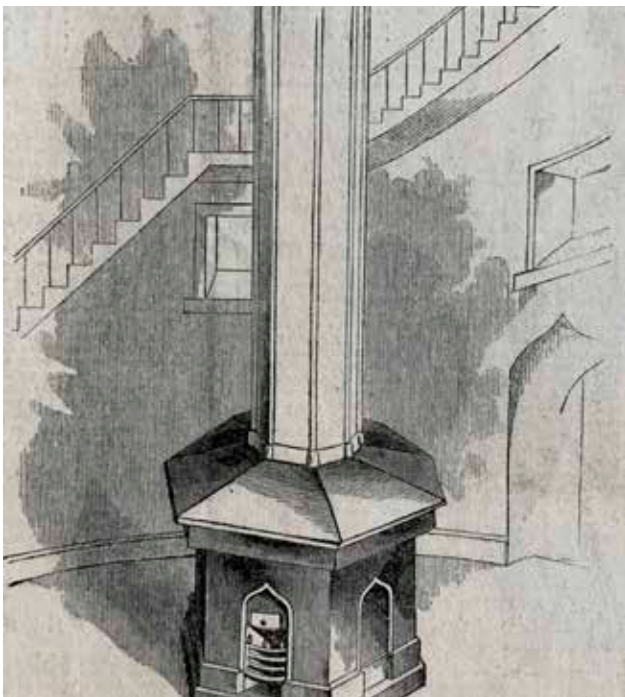
FACING PAGE - RIGHT: The new oil lamp referred to was a standardised design of Fresnel that was much used in the 1830s-60s. It consisted of a simple oil container with four concentric wicks shown at the top. Future developments would see many changes to the arrangement and number of wicks, particularly by Sir James Douglass. The automatic mechanism referred to is at the bottom.

THIS PAGE: Images of the three floors:

TOP: The third floor containing the optic.

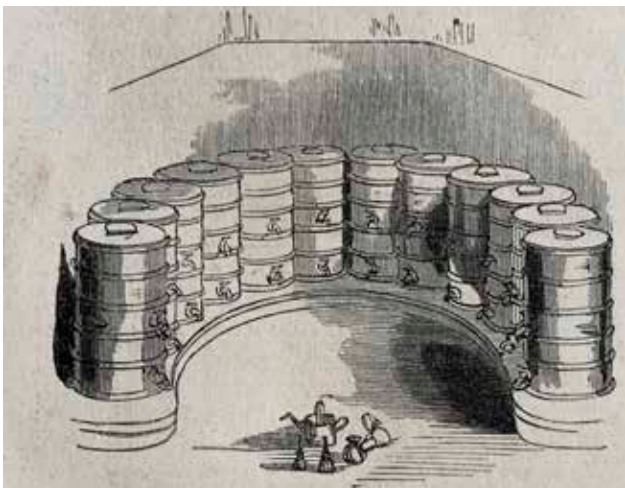
CENTRE : The second floor with a grate and a flue for warming the lantern

BOTTOM the oil stores on the first floor.



of prisms and lenses, which have the effect of magnifying and dispersing the light in a most extraordinary manner. The rays of light passing upward and downward from the lamp are caught by the prisms, refracted, reflected, split into thousands and thousands of vivid beams, and are then collected and conveyed on eight immense lenses, from which the most glorious flashes of intense white light or thrown continuously into the air. At a distance these several shafts of light appear to coalesce and form one sun-like luminary. The apparatus is enclosed in an immense lantern of plate glass, and the whole raised on a tower of 50 feet in height.

*"Internally the tower is divided into three floors; on the first the oil and stores are deposited; on the second the stove is kept burning to heat the lantern and glasses to a degree of warmth sufficiently strong to guard them against the deposition of moisture; and the third is devoted to the maintenance of an equitable temperature throughout the tower at all seasons of the year. The lamp is a great curiosity, as it is automatic in its action, and furnished with an apparatus which sounds an alarm the moment the oil runs low, or any accident occurs to derange the machinery. The dioptric light is a French invention, and the South Foreland establishment is the only one of the kind in England. We trust to see it universally adopted."*¹⁵



¹⁵ *The New Dioptric Lighthouse on the South Foreland. The Pictorial Times, 14 March 1846 p173.*

A Visit To A Lighthouse¹

Afar off from the sea, the South Foreland lighthouses – for there are two – present themselves. The far-famed cliffs of Dover, and the distant town itself, with its towering old castle, are visible; the little bay of St. Margaret nestles close by, while Deal, Pegwell Bay, and Ramsgate, are to be seen in the distance; the cliffs themselves are patched with verdure; every here and there masses upon the shore point upwards to rugged hollows whence they have fallen; the beach, steeply inclined, rests against the cliff, and the sea, limpid and pure, rolls gently upon the stones unbreaking, and make some murmuring, slumbrous sort of noise. But when old ocean is not in so amiable a mood, how altered is the scene. The pillows – tumultuously against the white cliffs; the beach roars angrily, as the waves rush upon it; the isolated masses of chalk roll stubbornly about, too weak to resist, but too heavy to yield easily, and the foam repelled from their sides ascends high to the summit of the cliffs – a white, cold, careering cloud, – while a crest of broken foam hides the dark surface of the mad waters. We have often observed the sun break through, and shine upon such a scene as this; and then, indeed, the wildness is very beautiful; the foam glistens, the crested waves shine boldly into light, the mist reflects the sun, the two lighthouses throw back the beams from their great glass windows, and perhaps a solitary ship labours through it all with only her storm sails set, while a distant crest of foam, and a wild raw, tell of the dangerous Goodwins, heaving tumultuously and asking for their prey.

We had not far to travel before reaching the lighthouses. A brisk walk up the steep road brought us to the summit of the cliffs. We skirted the village of St. Margaret's, ... and proceeding straight along the downs we presently came to the garden, and circling what is termed the "high," or "upper light." ... The garden was scrupulously tidy, the walk up to the building the same, and the building itself the very personification of cleanliness. The lighthouse ascends from a mixed and irregular, but rather picturesque assemblage of small outworks, forming habitations for the men, whose onerous duty it is to attend to the perfect working of the machinery. On entering the building, we were perfectly thunderstruck at the extreme strength and solidity of the walls. A stone staircase first lead to an upper chamber. Here a large centre, octagonal pillar, running upwards, first attracted our attention. Beneath it, appeared a sort of basement, formed of bronze, and evidently intended, as was indeed the pillar itself, for other purposes than either adornment or strength. This, we were informed, had been destined to serve as a warm flue, to prevent the too great cold from affecting the oil in the light department. The great height of the latter, however, had in part prevented its having the useful effect intended, and the

fire which the bronze supporter at the base, had been planned to contain, had for sometime been discontinued. Here again the staircase was of stone, the walls at least 4 feet in thickness, and the windows, small and narrow, attracting very little from the strength of the edifice. Up stairs we went, and arrived at a second apartment, smaller than the first, and filled with glasses, oil cans, reflectors, and all sorts of lighthouse machinery. We were much struck with the clearness and brightness of the glasses, or "chimneys," which more immediately surround the flame. They were at least a foot high, very thick, and seemed formed of the purist material. Numerous tins, filled with Brobdignagian wicks, were placed around, and we were still contemplating this maze of necessary adjuncts to a "beacon" when we were summoned to ascend still higher. But here we were provided no longer with a stone staircase; stone had given place to iron. The flooring of the chamber in which we entered was of iron, an iron winding staircase lead up to an iron platform, on an iron frame, wherein, suspended on an iron stand were the oil receptacle, the lamp, and the necessary paraphernalia of the light. To these, then, we immediately directed our attention.

The light at the South Foreland, in common, we suppose, with the other lighthouses of the kingdom, supplies itself with oil, and it effects this by means of very simple machinery. A circular plate, suspended perpendicularly, and moving upon an axis in the centre, is supplied with four pieces of brass, projecting horizontally from the surface of the plate; these knobs of brass are round, smooth, highly polished, and slippery, from their oily neighbourhood. The circular plate has provided an inner wheel, on which a cord is wound round. When a very heavy weight is attached to this cord, it causes the wheel to revolve slowly, and the cord to unwind: there, then, is the grand secret of the self-supplying apparatus. Suspended on upright supporters – one on each side of the circular plate – are pieces of iron, somewhat in the shape of a half circle, but so formed that their inner part, or the inside of the circle, forms a sort of obtuse hook; these hooks catch upon the pieces of brass projecting from the circular plate, but do not prevent it from turning, in consequence of the pieces of iron themselves, also moving upon an axis. When, then, the weight is attached to the perpendicular circular disc, and it begins to unwind, one of the brass knobs upon the disk catches, say the inner side of the bottom circle of the piece of iron suspended on the upright close by. The disk turning from left to right, and slowly revolving, of course the knobs upon it must press down the piece of iron. They do this; the half circle slowly gives, and the disk revolves. This half circle, however, is connected with that on the other side of the disk. When the one inner circle is moving downwards, or outwards, the other iron circle is being pressed inwards; but another knob, when the first has performed its office, comes against the opposite circle, and presses that onwards in its turn. The knobs are four in number; the iron half circles have of course four ends, and thus the reciprocal movement and counter movement is kept up.

¹ *Eliza Cook's Journal*, Volume VI (1851), p346-8.

Of course, when the weight is taken off, the action ceases, and the machinery "Pumps no more." The movements of these half circles are conveyed, by means of hidden machinery, upwards to the back of the light, but rather below it. Here again there is another arrangement; an airtight case is provided, separated into four airtight portions. Affixed to each of these four portions, or pieces of leather, also made airtight. In the centre of these pieces of leather is fixed a rod of iron. Moving horizontally, on a sensor pivot, or two levers, which are connected each with two of these pieces of iron, and consequently with two of the pieces of leather, and two of the airtight cases. The right-hand lever is connected with the end right-hand airtight case, and with the next but one to it on the left hand. The left-hand lever is connected with the end left-hand airtight case, and with the next but one to it on the right hand. Each of the airtight cases is provided with two valves, one at the top, moving outwards, and one at the bottom, moving inwards. All the airtight chambers open into one oil receptacle at the bottom, and into a common oil chamber at the top. When, therefore, one horizontal lever moves upon its central axis, it draws the leather outwards in one airtight chamber, and pushes it inwards in the other. Now for the simplicity of the operation. The leather drawn outwards creates a vacuum in its compartment of the airtight case; the valve at the top shuts down by the pressure; the valve at the bottom opens – inwards – and through that valve the oil rushes in. By this time the other side of the lever is commencing to move outwards and the one we have just been noticing, to press inwards. The pressure inwards, closes the valve which shuts inwardly, and opens that which opens outwardly, the oil rushes through the latter into the top oil chamber, then immediately into the wicks of the lamps, and supplies them with the necessary moisture. This the round is kept up, each piece of leather pulling outwards, and pressing inwards, alternately. Conduits carry away all the surplus oil. Now, then, we have reached the wicks. These are six in number. The outermost is the largest, and they gradually diminish in size to the centre one, which is therefore the smallest. They can each be raised to any height, independently of one another, so that the light may form a sugar loaf, or any other shape. When the wicks require snuffing, the lights have to be put out. The operation requires about a minute only, but a lamp is compelled to be shown by the men, to prove that they are there, and that the light has not gone out accidentally.

The reflecting apparatus, the most beautiful of all, is yet as simple as it is effective. Ranged upon perpendicular iron frames, all round the central light, are numbers of glasses of peculiar shape, and cut to a certain angle. The central portion is composed of one large sheet of glass, as clear of flaws as possible. This presents its convex surface to the ocean, and its concave to the light. Both above and below this, are prisms, so arranged at different angles, as to catch the rays of light, and project them

horizontally out to seawards. These prisms vary in size, and become smaller at the top of the frame, where they meet, so as to seize upon every vagrant ray, and violently refract it in the required direction. The glass in the frame is protected from the open air by another frame of common glass which encloses it, and which forms indeed the outer glass wall of the summit of the building.

"This ... is the same plan of light as that shown in the Great Exhibition, is it not?" Our attendant answered in the affirmative. We remembered having seen these brilliant ornaments in the centre aisle of the glass palace. They are the invention of a French man, too. What a miracle, that our government should have so promptly availed itself of these improvements!

"The other lighthouse," said our attendant, "is provided with the old reflectors. It has six distinct lights, with each an independent reflector behind it, but it is not so good as this one, after all."

"And did we not hear something of an intermittent or flashing plan?"

"Revolving glasses," said Professor Jones, "with sometimes several, occasionally only one, revolving glass. Each time the revolution was made, there was a flash of light, and it could be so regulated as to give one flash every minute, or a greater number."

"How much oil," we enquired, "do you use in the course of one night?"

"The quantity varies," replied our attendant. "In the winter, about 2 gallons, and in the summer, of course, much less. There are portions of the winter, however, when we use even more. Our annual consumption of oil is about seven or 800 gallons."

"We use rape," added he, "and have the stock of oil arranged in cans below stairs." We descended into the oil depository, and if we had been struck with the cleanliness of everything above stairs, how much were we gratified with the appearance of everything below. 12 large cans, full of oil, were arranged upon a platform round the chamber – a circular one. Hanging to each of the stopcocks, was a brilliant little copper vessel, placed to catch the drops of oil. Below, upon the floor, was another vessel, intended for the same purpose. Yet, with all this plenitude of oil, there was not sufficient to be seen, for the most moderate of persons to dress his hair with.

"And how much oil do you compute these cans to contain?"

"There are 12 cans," he replied; "each holds 84 gallons."

"1008 gallons of oil," said we; "humph!"

We again ascended, took a peep into our conductors private apartment, thought of the delight of a marine residence in such a place, and thanking our patient attendant for his trouble, and the care he had bestowed upon us, "we went upon our ways."