after premising some acute and ingenious speculations with respect to the effects of unexpectedness and surprise, and of wonder and novelty, the author proceeds to give a brief, masterly, outline of the different astronomical systems, from the earliest ages down to that of Newton. The fragments that remain of the other two historical essays are much less complete, and do not possess the interest of the for­mer. The short essay, *Of the Affinity between certain Eng­lish and Italian* *Verses* is curious rather than valuable. It affords a striking illustration of the variety and extent of Dr. Smith’s literary pursuits. The disquisition with re­spect to the *External Senses* is of considerable extent. It embraces some ingenious discussions, and is a valuable con­tribution to the science of which it treats.

The *Wealth of Nations* has passed through many editions, some of which have been accompanied with notes and il­lustrations ; but the best that has yet appeared, is that which was edited by Mr. M'Culloch, with notes and disserta­tions, embodying the views of later economists, and adapt­ing the work to the present state of that science of which it has so eminently contributed to advance the progress.

SMITHERY, a smith’s shop; also the art of a smith, by which iron is wrought into any shape by means of fire, hammering, and filing.

SMITING-Line, in a ship, is a small rope fastened to the mizen-yard-arm, below at the deck, and is always furled up with the mizen-sail, even to the upper end of the yard, and thence it comes down to the poop. Its use is to loosen the mizen-sail without striking down the yard, which is easily done, because the mizen-sail is furled up only with rope-yarns ; and therefore when this rope is pulled hard, it breaks all the rope-yarns, and so the sail falls down of it­self. The sailor's phrase is, *smite the mizen,* that is, haul by this rope that the sail may fall down.

SMOAKY Cape, on the east coast of New Holland. Long. 153. 42. Lat. 30. 55. S.

SMOKE, a dense elastic vapour arising from burning bodies. As this vapour is extremely disagreeable, and often prejudicial to health, several contrivances have been devised for the purpose of enabling us to enjoy the benefit of a fire without being annoyed by smoke ; hence the use of chimneys, which, when properly constructed, carry it off entirely, but when improperly constructed, allow a part of it to escape into the room.

Chimneys operate in carrying off smoke by the rarity of the gaseous fluids which escape from the fire, and which, owing to their being expanded, are lighter than the ad­joining air, and are therefore pressed up by it, carrying the smoke along with them. So long, then, as the gaseous products of the fire are lighter than the air, they ascend, while at the same time cold air must rush in from below to supply their place, which air, being heated in its turn, con­sumed, and mixed with the smoke, must also rise. The more, therefore, that the air in the chimney can be kept warm, so much the better ; not only will the draught be­come greater, but there will also be less chance of any of the smoke being thrown back. The worse the power of the material of which the chimney is constructed tor transmit­ting heat, the longer will the air within it be kept warm, and therefore the chimney will work better ; hence the su­perior efficacy of bricks.

It is evident from what has been said, that there is a cer­tain height to which chimneys may be carried, beyond which any farther lengthening, instead of being beneficial, will prove injurious; because, when the air within the chimney and without become of the same weight, which must be at a particular height in each, then if that chim­ney be made higher, the air within does not escape, or es­capes slowly ; air must therefore enter in slowly from be­low, and consequently the draught must be diminished. There are many circumstances which prevent chimneys

from working well, or in other words, which make them re­turn a part of the smoke into the room.

The causes of the smoking of chimneys may be reduced to nine, differing from each other, and therefore requiring different remedies.

1. *Smoky chimneys in a new house are such frequently from mere want of air.* The workmanship of the rooms being all good, and just out of the workman's hands, the joints of the boards of the flooring, and of the panels of wainscotting, are all true and tight; the more so as the walls, perhaps not yet thoroughly dry, preserve a dampness in the air of the room which keeps the wood-work swelled and close. The doors and the sashes too, being worked with truth, shut with exactness, so that the room is as tight as a snuff-box, no passage being left open for air to enter except the key­hole, and even that is sometimes covered by a little drop­ping shutter. Now if smoke cannot rise but as connected with rarefied air, and a column of such air, suppose it fill­ing the funnel, cannot rise unless other air be admitted to supply its place ; and if therefore no current of air enter the opening of the chimney, there is nothing to prevent the smoke from being diffused in the room. If the motion up­wards of the air in a chimney that is freely supplied be ob­served by the rising of the smoke or a feather in it, and it be considered that in the time such feather takes in rising from the fire to the top of the chimney, a column of air equal to the content of the funnel must be discharged, and an equal quantity supplied from the room below, it will ap­pear absolutely impossible that this operation should go on if the tight room is kept shut ; for were there any force ca­pable of drawing constantly so much air out of it, it must soon be exhausted like the receiver of an air-pump, and no animal could live in it. Those therefore who stop every crevice in a room to prevent the admission of fresh air, and yet would have their chimney carry up the smoke, require inconsistencies, and expect impossibilities. Yet under this situation it is not uncommon to see the owner of a new house in despair, and ready to sell it for much less than it cost ; conceiving it uninhabitable because not a chimney in any one of its rooms will carry off the smoke unless a door or window be left open. Much expense has also been incurred to alter and amend new chimneys which had really no fault. In one house particularly which Dr. Franklin knew that be­longed to a nobleman in Westminster, that expense amount­ed to no less than L.300, after his house had been, as he thought, finished, and all charges paid. And after all, seve­ral of the alterations were ineffectual, for want of under­standing the true principles.

*Remedies.* When you find on trial that opening the door or a window enables the chimney to carry up all the smoke, you may be sure that want of air from without is the cause of its smoking. “ I say from *without,”* adds Dr. Franklin, “ to guard you against a common mistake of those who may tell you the room is large, contains abundance of air suffi­cient to supply any chimney, and therefore it cannot be that the chimney wants air. These reasoners are ignorant that the largeness of a room, if tight, is in this case of small im­portance, since it cannot part with a chimney full of its air without occasioning so much vacuum ; which it requires a great force to effect, and could not be borne if effected.”

It appearing plainly then, that some of the outward air must be admitted, the question will be, how much is abso­lutely necessary ? for you would avoid admitting more, as being contrary to one of your intentions in having a fire, namely, that of warming your room. To discover this quan­tity, shut the door gradually while a middling fire is burn­ing, till you find that before it is quite shut the smoke be­gins to come out into the room ; then open it a little till you perceive the smoke comes out no longer. There hold the door, and observe the width of the open crevice between the edge of the door and the rabbet into which it should shut.