

VENTILATION. 2. Recent Expedition, *continued*—

Sir L. McClintock, "Discovery"—

Space for crew smaller than usually allowed, 3256; more officers on board, 3256, 3311-13; otherwise the arrangements of the recent expedition superior to others, she had less space than he wished for, 3311-13; space for crew encroached on by building an officers' cabin, 3331.

Alexander Gray, "Discovery"—

More room and comfort on board the "Discovery," 7317; the main deck comfortable, but not warm, 7320-21; not stuffy, 7322, or extraordinarily wet, 7323-4, as much or more wet in whalers, 7323.

Mr. Emmerson, "Discovery"—

Everything they could wish for, 8087; but lower deck very damp in winter, 8165; but the carpet on the lockers was always wet from condensation, 8087; plenty of room on the lower deck, as much as usual in the navy, 8808-9; sat on their clothes lockers, 8091; no ventilation under them, 8092-3; uptakes put to different places, 8097; everything tried, but nothing stopped the condensation, 8098; formation of ice in the house over the hatchways, 8099.

William Jenkins, "Discovery"—

More room than in other ships, 8376; no possibility of preventing condensation under the situation, 8378, 8431; the mess place was very comfortable, 8379; a good deal of damp in the lower deck, 8430-1; its increase with increased fires, 8431.

## 3. Former Expeditions.

Sir G. Nares—

"Intrepid" and "Pioneer" warmed in the ordinary way, considered superior to the Sylvester stove, and the ships were used as hospital ships, 9303.

Admiral Richards, "Assistance" and "Resolute"—

The "Assistance" very comfortable, 3108, advantage of its teak deck, 3108; a good deal of drip from ice forming overhead, 3109; the wet nearly cured the second winter by wooden hoods over the hatchways, 3110, 3210; they acted as condensers, 3167; wet only produced discomfort, 3110; the moisture ascended to the hatchways and congealed there, 3203; great comfort in absence of moisture, but doubts any effect on health, 3204; the "Resolute" not fitted in similar manner, 3113; decks of "Assistance" always clear for five hours a-day, 3205; object to get rid of vapour, success the second winter, 3210; means taken to promote ventilation, 3213.

Sir L. McClintock—

"Enterprise" lower deck more uncomfortable than "Investigator's," and health worse, 3278-9; "Investigator" more healthy, having a better lower deck, 3278; had more cubic space than "Discovery," 3257; "Fox," snow porches built over hatches, 3322; to retain warmth, 3323; ventilating tubes put in remote corners, 3338; there was no obvious impurity of the air, 3339; dampness due to insufficient ventilation, 3367; ventilation of "Fox" was by stoves, with a few tubes as uptakes, 3383.

Dr. Foms, "North Star"—

Arrangements for ventilation, cleaning decks, 3554; difficulties occasioned by her being on her beam ends, 3554; she had two decks, 3561; the men lived on the same deck as the officers, 3561; no one slept on the lower deck, 3562-3; ventilation sufficient for health, decks being cleared every day, 3564; air changed by funnels and when hatchways opened, 3565; the covering of the hatchway, 3566-70; deck cleared for about three hours, air admitted, 3648-9; and impurity (thus to some degree prevented, 3651; but not sufficiently, 3652; more could not be done without damage to men by keeping them too long out, 3653.

"Pioneer"—

Not so comfortable as "North Star," having a less proportionate space, 3593-5.

Captain Allen Young, "Fox"—

The "Fox," during drift of ice, housed in ordinary manner of royal navy ships, 3812; dryness of the ship, 3769, 3813.

Dr. Scott, "Intrepid"—

Accommodation better than "Resolute," 3899; he suffered from dripping at night, 3899; the lower deck comparatively dry, 3900; ventilation by an uptake, 3901-2; air admitted by the hatchway, 3903; which had a double door, 3904; the galley also was a dowlake, 3906; the deck was pure and sweet, 3907.

Mr. Ede, "Assistance"—

Warmed by Sylvester stove, 4050; ventilation was by it and opening of hatchways, 4055; had dowlakes, 4056; no uptakes, or tanks over hatchways, 4057-8; the air tolerably pure, the lower deck emptied by sending men out, 4059; not much drip, 4060; ventilation better than in "Resolute," 4062; having more height between decks, 4063; the moisture was driven off by the Sylvester stove 4237; no difficulty in ventilation in the frigate in which he saw scurvy, 4222-3.

Dr. Lyall—

Ventilation of "Assistance," 4267-87; improvement the second winter, 4267, 4261; by building a house over the

VENTILATION. 3. Former Expeditions, *continued*—

main hatchway, 4267-9; the only one used to go on deck, 4273; thus preventing rush of cold air in when opened, 4267; uptakes from fires, cooking apparatus and stoves, 4268; less drift, 4282; tanks with manholes over the fore hatchway for condensation of heated air, 4274-5; a Sylvester stove used, 4277.

Dr. Piers—

In "Investigator," metal ventilators as uptakes, through the deck and awning, 4490-91; dowlakes by the hatchways only, 4492-3, 4660; there was a hatchway for the men forward, 4661-3; much drip from the beams of the upper deck, constant wiping, 4494; in some of the officers' cabins the moisture dripped, 4497; only one hatchway used, 4501-2; extent to which this was housed over, and what doors there were, 4503-6; they never suffered, owing to ventilation, 4659.

Vice-Admiral Ommanney—

Of "Assistance," pains taken by Captain Austin, 5731; deck kept as clear as possible, 5731; apertures of the hatchways kept open, except in extreme cold, 5731; temperature from 49 to 50 degrees on lower deck, 5731, 5791; cowls fitted for carrying off vitiated air, but no dowlakes except hatchways, 5732; advantage of these arrangements in ventilation and temperature, 5792-3; his cabin the coldest but seldom below freezing point in the morning, 5741; the fresh air from the hatchways not heated previous to admission, 5794; that from the Sylvester stove was, 5794; the "Assistance" had more space than the "Alert," "Discovery," or "Resolute," 5881; the ventilation in her as perfect as possible, 5882.

Rear-Admiral Pullen—

"North Star" had two decks, the main for berths, the lower for work, 6215; advantage of this, 6216; ship was damp (whilst on shore) when on her broadside, but it was cleared off when upright, 6218; was warmed by Sylvester stove, and stoves, 6217.

Mr. Bayley, "North Star," 1848-49—

Warmed by stoves, had not Sylvester stove, 6252-3; much dampness, 6311; means of removing it, 6312; warming apparatus rigged up impromptu, 6515; not so comfortable as the "Assistance," 6519.

"Assistance," 1852-54—

Pleasanter than "North Star," 6276, 6520; owing to Sylvester stove and better accommodation, 6277; not much moisture to complain of, 6281-2, 6467-8; improvement the second winter in hatchways and awnings, 6284-5; description of door over hatchways, 6470; no complaint of admission of cold air, 6471; lower deck comfortably warm at night, 6458; deck covered with a foot of snow, 6463-4; advantage of this, 6465; lower deck very comfortable, 6475.

J. Organ, "Resolute," 1850-51—

Better ventilation than "Enterprise," 6551; good ventilation and no damp, 6724-5; "Assistance" good also, 6724-5.

"Enterprise," 1848-49—

Lower deck very damp, much moisture and ice, 6533-6, 6718; partly due to galley, 6720; lower deck was not crowded, 6719-20; and did not smell stuffy, 6723; ventilation defective, compared with other ships, 6797; more moisture than in his other ships, 6798.

Mr. Murray, "Enterprise" 1850-55—

Better ventilated than "Investigator" in 1848-49, 6836; ventilation in first winter in 1850-55; housing and warming, 6853; what doors the hatchways had, 6854; a tank over the main hatchway as condenser, 6854-6; mainhold partly used for living in, 6868-4; and washing clothes, 6867; better ventilated than "Investigator," 6949.

"Investigator," 1848-49—

Had cumbersome chests on the lower deck, not so much ventilation as the "Enterprise" in 1850, 6834a-9.

Dr. Barnes—

Ventilation of the "Dreadnought" well cared for, 7083.

Sir A. Armstrong, "Investigator"—

The supply of coal was reduced from 70 to 50 lbs. a day, 8946; funnels for ventilation opening above the housing 8948; rarified air would rush out like steam, 8948.

## 4. Condensation.

Sir G. Nares, "Alert"—

Wet in bedding, on "Alert," from condensation, with men sleeping near a hatchway, 119, 215; advantageous arrangements for drying-room, and escape of its condensation, 121; larger area per man than on "Resolute," 226; some amount notwithstanding, 216; officers' cabins the dampest part, 216.

Commander Pelham Aldrich, "Alert"—

Men told off to wipe it off the beams, 1303.

Color-Sergeant Wood, "Alert"—

Amount of it, 7870-71; it was wiped up, 7872; not so much at night, 7876.

Captain Stephenson, "Discovery"—

Condensation in winter great on lower deck, 338.

Commander Beaumont, "Discovery"—

A good deal, 1006-8; it existed on the living deck, and chiefly during cooking and sleeping, 1186.