## Barnett on the Warming, etc., of Railway Care.

g;

ult

in

ri-

:04

he

)n•

ity

en

he

l a

is

of

re

er

nt,

f "

mĭ

ho

ia-

rst

ire

ite

of

of

ts,

er-

in

or

in

us

5).

t),

at

ot

g-

by

parting slowly with its rapidly absorbed heat, so that, for instance, with an external temperature just at freezing, a street car will retain a comfortable warmth for two hours. To suit ordinary train service it is proposed that the reservoirs shall be charged when the locomotive is running down grade and has steam to spare. The defects of this system are a difficulty in obtaining flexible couplings for high pressure steam, and the risk of scalding in case of accident; and the fact that failure of locomotive would eventually result in freezing out the passengers prevents it from being considered a prastical scheme for long through runs or for isolated branch trains.

VENTILATION. -- Having continuous steam-pipes throughout the car, the question of ventilation in winter is not a difficult one, a few small inlets close to pipe, with wide open exhaust ventilators in roof, giving free exit, are conditions fairly conducive to health and comfort.

The many and variously designed stoves, with passages in or around them, through which air is forced from Cowl or Bellmouth on top of roof when train is in motion, and thence through hot air flues provided with foot registers the length of the ear, have not proved a success, being deficient in heat and at the same time making the air too dry. Heat radiated is far more comfortable and healthy than heat delivered by convection.

The minimum sapply of fresh air required to keep a car carrying 60 passengers, in sweet and healthy condition is 1,000 cubic ft. per minute, and the more this amount can be increased (without inducing draughts) the better.

For summer service a narrowing opening at front end of car under platform hood will no doubt admit enough air when car is moving; but it is not sufficiently diffused, a draught being felt about the 4th or 5th row of seats, which fino wire screens or adjustable louvre boards fail to get rid of. A roof cowl, of almost any pattern, open to front of train will force sufficient air in, and it can be distributed at various points in ceiling, sides or floor, according to the number of distributing pipes and adjustable registers used, but the air there collected is far from pure, the dust not only annoying the passengers, but settling in the pipes, and eventually choking up the passages. Fine wire screens reduce the air pressure out of all proportion to the dust they exclude; and have no effect on smoke, sulphur, etc., from engine, which is apt to trail over the train, especially in woody country and in cuttings, Thirty-three years ago air was so forced through water-spray, the resultant inky colour of the water proving that it performed its work well; but the apparatus occupied too much space, and in damp weather the car was