as in the case first considered in this paper, the instantaneous pressure p_i may be expressed in terms of its partial differential coefficients, and of the density at the point where the pressure is being considered.

It is also shown that, in the general case, where the whole or a portion of the fluid is endued with velocity, the instantaneous pressure may be ascertained by adding to the expression of the last paragraph a term involving the density and the partial differential coefficients of the velocity at the point where the pressure is being considered.

It is finally shown that, in the case of the transmission of a pulse through a cylindrical tube where the motions are small, the equation of motion will be of this form,

$$\frac{d^2y}{dt^2}=\frac{a^2d^2y}{dx^2}-\frac{b^2d^2y}{dxdt};$$

where x denotes the distance from the origin measured parallel to the axis of a given stratum in the state of rest, y the same distance at the time t, and a^2 and b^2 are constants, the value of a^2 being the same as in the ordinary theory.

As this equation leads to the conclusion that there are two velocities, it results that, except perhaps in very rare instances, in which a duplication has been observed in sounds heard at very great distances, the proposed correction of the theory of the motion of elastic fluids will not practically affect the theory of sound.

By the method adopted in the case of elastic fluids, the author conceives himself to have established that, in what are commonly termed inelastic fluids, the pressure during motion will not be equal in all directions.

IV. "On the Nerves of the Liver, Biliary Ducts, and Gall-bladder." By Robert Lee, M.D., F.R.S. Received August 18, 1862.

(Abstract.)

After adverting to the deficiency of existing knowledge respecting the distribution and arrangement of the nerves of the liver, the author states that he has recently made dissections which "prove that all the arteries which ramify throughout the substance of the liver, even the most minute, are accompanied with nerves, on which

there are enlargements resembling ganglia, and that the hepatic ducts and gall-bladder are largely supplied with these gangliform plexuses of nerves, which all arise from the semilunar ganglion and solar plexus."

In a Postscript, received October 4, 1862, the author adds, that from an elaborate dissection which he has made since the date of the paper, "it is demonstrated—

"1. That the nerves of the liver take their origin from ganglia situated around the root of the hepatic artery, which are intimately connected with, or actually form a part of, the semilunar ganglion of the great sympathetic.

"2. That the hepatic nerves, thus originating, proceed to the liver along with the hepatic artery, hepatic veins, the vena portæ, and the hepatic ducts.

"3. That the hepatic nerves, on reaching the liver, send numerous branches to the different lobes, along with the ramifications of the hepatic artery to every part of the organ, and that plexuses of nerves accompany the most minute branches of the arteries.

"4. That the hepatic and cystic ducts are surrounded with plexuses of ganglia and nerves, and that nerves accompany the arteries of the gall-bladder throughout their distribution.

"5. That besides these nerves, accompanying the trunk and branches of the hepatic artery and surrounding the cystic and hepatic ducts, there is a great system of ganglionic nerves distributed to the walls of the vena portæ."

V. "On the Volumes of Pedal Surfaces." By T. A. Hirst, F.R.S. Received 28th August, 1862.

(Abstract.)

Since the term "pedal surface" has but recently been definitively adopted*, it may be well to state that it indicates, simply, the locus of the feet of perpendiculars let fall from a fixed point, the *pedal origin*, upon all the tangent planes of a given surface. It is sometimes convenient, too, to regard the pedal surface as the envelope of a sphere, whose diameter is the radius vector from the pedal origin

* A Treatise on the Analytic Geometry of Three Dimensions. By George Salmon, D.D. 1862.