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LE RISORGIVE NELLA PIANURA PARMENSE E PIACENTINA

ABSTRACT: PETRUCCI F., BIGI B. PECORARI M. & VIDONI TANI M. E., Springs in the Parma and Piacenza plains (IT ISSN 0084-8948, 1982).
Attention is drawn to spontaneously occurring water sources or underground springs in the W Emilia plain at a time when the safeguarding of fresh water is becoming a matter of increasing importance. The study is based on information concerning the Quaternary sediments constituting the subsoil of the plain. Factors responsible for the establishment of areas rich in springs are identified. The outflows (sometimes considerable) are quantified, and the chemical purity of the waters concerned in assessed.
The throwing out of spring waters may be said to depend on three different causes: a) Uprising of deep water due to reduced permeability of downstream sediments; this is the most frequent situation. Springs formed in this way are distinguished by their relatively constant flow, comparable to that of deep aquifers that only display to effects of changes in precipitation after a long interval; constant temperature with no seasonal variations; chemical data within regional potability standards. b) Tectonic changes in the seafloor, with upheaval of nearly to the surface of impermeable formations that bar the progress of underground streams. c) A few groups covering very limited areas appear to be clearly associated with the “water table”. Here the outflow is inconstant and a function of precipitation; the temperature is also influenced by the outside environment.
The substance and conclusions of this paper must necessarily be brought within the context of earlier work on the deep aquifers of the plain that has gone beyond schematic and theoretical determination of the geological features of the Quaternary alluvial cover. This stage of the investigation clarified both to dynamics of these underground waters and their feed mechanisms, and led to the abandonment of insufficiently checked and hence uncritically applied patterns. In particular, the concept of a water table as a continuous unit extending over a large area, and capable of interception by means of drilling to virtually a constant depth, as been rejected. The new model is the fruit of a uge quantity of geological, hydrological, and geopysical data. It presents aquifers whose geometry is completely lacking in regularity, due to the chaotic distribution of clasts in the alluvial cover. This detailed information made it unlikely from the outset that a single water table existed, and hence a wholly freatic supply for the springs. The data made it increasingly evident that the classic model, in which springs are attributed to a simple intersection between a continuous water table and the topographical surface, was inapplicable to this type of alluvial plain. By contrast, the marked flow rates, slight seasonal variations, distinct degree of artesianism, temperature, and chemical caracteristics of these waters combined to suggest that they were of deep origin. Lastly, it should be pointed out that, even in this restricted area, distinctions could be drawn between groups of springs whose local geological situations were so different that no correlations could be determined, nor could a single classification be worked out.

RIASSUNTO: PETRUCCI F., BIGI B., PECORARI M. & VIDONI TANI M. E., Le risorgive nella pianura parmense e piacentina (IT ISSN 0084-8948, 1982).
Con questa ricerca si è voluto richiamare l'attenzione sulle manifestazioni sorgentizie, o risorgive, nella pianura dell'Emilia occidentale, in un momento in cui la tutela delle « acque dolci » è sempre più importante. Lo studio, basato sulla conoscenza dei sedimenti quaternari che costituiscono il sottosuolo della pianura, si è indirizzato alla identificazione dei fattori che hanno determinato le diverse aree di risorgiva, alla quantizzazione degli efflussi (talora considerevoli) e allo stato di purezza delle acque sotto l'aspetto chimico.
La fuoruscita delle acque di risorgiva sarebbe determinata da tre distinte cause: a) Risalita a giorno delle acque profonde per una generale impermeabilizzazione (minore permeabilità) dei sedimenti a valle: questo è il caso più frequente. Si distingue per la relativa costanza di portata, comparabile a quella degli acquiferi profondi che risentono solo a distanza di tempo delle fluttuazioni degli apporti meteorici; pure la temperatura è costante e non subisce variazioni stagionali; le caratteristiche chimiche rientrano negli standards regionali di potabilità. b) Alcune aree di risalienza sono determinate dalla Tettonica del substrato marino che ha portato fin quasi in superficie formazioni impermeabili a sbarrare il percorso delle acque sotterranee. c) Alcuni gruppi (molto limitati arealmente) sembrano più decisamente legati alla «falda freatica ». In questi casi l'efflusso è incostante e in funzione delle precipitazioni; anche la temperatura risente dell'ambiente esterno.

TERMINI CHIAVE: Geoidrologia; Geologia del Quaternario; Sedimentologia; Pianura Padana.